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Nitrate of Potash Plant Construction Plans Revealed

Southwest Potash To Operate New $7 Million Facility

NEW YORK — American Metal Climax, Inc., will construct a new $7 million plant in Vicksburg, Miss. to produce nitrate of potash and chlorine, announced Frank Coolbaugh, president.

The new plant will make nitrate of potash available for the first time at prices in the range of presently used fertilizer chemicals. Employing a new process, the plant will be operated by Southwest Potash Corp., a division of American Metal Climax, Inc.

According to Thomas W. Childs, president of Southwest Potash Corp., the new process has been under development for five years and has been pilot-plant tested in association with Jacobs Engineering Co. and the Colorado School of Mines Research Foundation at Golden, Colo.

Mr. Childs said that engineering and construction of the Vicksburg facility will begin immediately, and that operations are scheduled to begin in October, 1961. The plant will be located adjacent to the local operations of Spencer Chemical Co. and the main line of Illinois Central Railroad.

Nitrate of potash is one of the best

(Turn to PLANT, page 20)

PCA Merges With Canada Subsidiary

WASHINGTON—The recent merger of Potash Company of America, Ltd., a wholly-owned subsidiary of Potash Company of America, with the parent company was announced by John W. Hall, president of both concerns.

Potash Company of America has acquired all of the assets and assumed all of the liabilities of the subsidiary. This does not increase the responsibility of P.C.A. inasmuch as the parent company had guaranteed the obligations of Potash Company of America, Ltd. It does, however, indicate that the parent company is determined to move forward with the development of the Canadian property.

The shaft of the Canadian subsidiary, located near Saskatoon, was bottomed at 3,450 ft. in June of 1958. The startup operation of the mine and concentrator began in December of that year and the first shipment

(Turn to PCA, page 20)

USDA Reports Big Year for Crops in '60 Despite Poor Start

WASHINGTON — Despite a slow and backward planting season which troubled the fertilizer industry as well as growers, the 1960 agricultural season has every appearance of being one of the highest production years on record, according to the USDA crop reporting board which has just released its figures as of July 1.

A favorable crop outlook is seen in most areas of the U.S., although prospects were "only fair" over much of the South where a cool, wet planting season was followed by light rains in May and June. Cool, rainy weather has dampened hopes of optimum crop production in parts of the Upper Mississippi Valley, while much of the Central Western Mountain area has been too dry for good crop development, the report says.

Among the larger crops in 1960 are soybeans, cotton and corn, according to USDA. Tobacco, also, is listed among the more prolific crops. It increased 3% above last year, with acreage being about the same as that of 1959. The report says that soybean acreage is 5% above 1959 and only slightly below the record acreage of 1958. Soybean planting suffered considerable weather delays, but was nearly completed by July 1.

Weeds are troublesome in areas where rainy weather hampered cultivation. Flaxseed production is expected to be two-fifths larger than the small 1959 crop with increased acreage and prospects for higher yields. Seeding was interrupted by frequent rain and a significant portion of the acreage was planted late, says the report.

Cotton was planted on a 3% larger acreage than last year, with largest increases in Alabama, Arizona, and California. The crop started slowly,

(Turn to BIG YEAR, page 20)

Panel Discussions Highlight Pacific Northwest Conference

SALT LAKE CITY, UTAH—Panel discussions, talks on fertilizer and soils, films, a tour and luncheons and banquets were all featured at the Eleventh Annual Pacific Northwest Regional Fertilizer Conference held at the Hotel Utah here, July 13-15.

One panel discussion, "Shooting for Efficient Production on Non-irrigated Pastures and Rangeland," was moderated by Dr. Malcolm McVickar, California Spray-Chemical Corp., and featured 10 minute talks by university, industry and ranch representatives.

Keith B. Campbell, Western Phosphates, Inc., Salt Lake City, started the discussion by saying:

"To use the proper strategy in fertilizing rangeland or in promoting a profitable range fertility program, we need to answer many questions. These questions include:

"1. What kind of rangeland do we have in our area?

"2. Who has a need for this rangeland?

"A. What is it used for?

"B. What do they want to use it for?

"C. Are they willing to invest money to accomplish their desired use of this land?

"3. How can fertilizer help us use the rangeland as we want to?

"4. How do we get good range practices into practical use?"

T. L. Jackson, Oregon State University, Corvallis, then spoke on "Teamwork Between Grasses and Legumes," stating that:

"When we use the word teamwork we immediately think of two people working together to do a job.

"This same idea of teamwork applies when we think of using grasses and legumes together to produce forage for a livestock operation. We need to combine the peak production and nitrogen fixing ability of legumes with the

(Turn to NORTHWEST, page 7)

Simplot Acquires Anaconda Fertilizer Plant Facilities

POCATELLO, IDAHO — The Anaconda Co. and the J. R. Simplot Co. have announced that Simplot has acquired the entire fertilizer plant facilities of the Anaconda Co. at Anaconda, Mont., and has leased Anaconda's phosphate properties at Conda, Idaho, on a long-term basis.

The Anaconda line of fertilizers will continue to be available and Anaconda will operate the phosphoric acid and ammonium phosphate facilities at Anaconda for Simplot. Marketing will be done by the Simplot Co.

The Simplot Co. has also announced an expansion program now underway at its Pocatello, Idaho, fertilizer plant designed to double its present 500 ton a day phosphoric acid and triple superphosphate fertilizer production to 1,000 tons a day, according to W. Grant Kilbourne, vice president and general manager of the minerals and chemical division. This expansion is expected to be completed this year so that the added production will be available for the fertilizer season next spring, Mr. Kilbourne said.

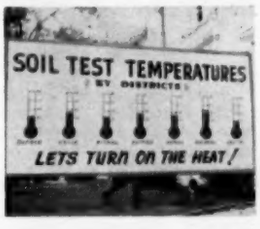
BETTER SELLING FEATURES INSIDE.....

MERCHANDISING MARKETING SECTION

Soil Test Campaign . . .

A Georgia county goes all out in its effort to make its residents aware of the value of the soil test. An explanation of how this was accomplished is contained in this issue . . .

Story on page 9



Non-Farm Use . . .

The third in a series of articles by Arnon L. Mehring concerning non-farm fertilizer use appears in this Croplife. Mr. Mehring covers the South-Atlantic area . . .

Story on Page 14

TABLE 2

Estimated Retail Value of Fertilizer Used by Non-Farm Homes in the South Atlantic States*

Kind	Retail value
Mixed fertilizers	$11,200,000
Small packages	1,800,000
Pesticide mixtures	300,000
Lawn service	1,400,000
Materials	2,300,000
Total	$16,740,000

*Year ended June 30, 1959.

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Canada's Livestock Dependent on Fertilizer Says Agriculture Head

MOUNT GABRIEL, QUE.—If the livestock industry in the province is to increase and prosper, Quebec farmers must increase the fertility of their soils, said Pierre Labrecque of Quebec City at the annual conference of Quebec Fertilizers Inc., here recently.

Mr. Labrecque, who is director of the animal husbandry division of the Quebec Department of Agriculture, said that while agriculture in the province is based on livestock production which is the principal source of the farm income, there is insufficient good forage to feed any more cattle because of the poor condition of most of our soil and "very little is being done to improve it."

Lime, to neutralize acid soils, and commercial fertilizers, to increase the fertility, he said, are almost unknown on some farms. Even if they are used occasionally, amounts are so small the effects cannot possibly be anything but very limited.

"We are accustomed to estimate the efficiency of the farms in the province of Quebec by the number of acres required to feed one unit of livestock," Mr. Labrecque said. "On these terms the number of units which can be kept on a farm depends on the amount of hay and pasture available. But it's not the quantity of hay we are worried about but the quality and Quebec hay does not measure up to expectations. Liming and fertilization will improve both quality and yield."

Describing tests conducted at Lennoxville, Que., the speaker said one experiment with dairy cattle showed a profit of $6.52 for every dollar spent on fertilizer. A second experiment with beef cattle realized a net profit return of $4.36 for every fertilizer dollar.

"Any business would consider this a good investment," he concluded.

Guy Gubbay, chairman of the agronomic committee, reported that Q.F.I. started off 1959 with only 39 pasture demonstration plots and at the beginning of June of this year the association had 101 under its supervision. Fertilized plots, he said, showed an average return of $3.16 in increased milk production for each dollar spent on fertilizer and the average revenue per arpent of fertilized pasture was $147.04 against $96.08 from non-fertilized check plots.

Penick Acquires Control Of Canadian Firm

NEW YORK—S. B. Penick & Co. has acquired majority interest in Fine Chemicals of Canada, Ltd. of Toronto.

The 20-year-old Canadian firm is a manufacturer of medical fine chemicals, botanical drug products and animal derivatives including liver and glandular extracts. It also does custom ampouling of medicinal products for pharmaceutical manufacturers.

Edwin G. Dentay, founder, will continue as head of the firm, and no other executive changes are anticipated.

Insecticide Labeled For Cucumbers, Squash

NEW YORK—Sevin insecticide, in both dust and 50W spray formulations, can now be used to control five major pests of cucumbers and summer squash. The carbamate insecticide has been labeled for control of cucumber beetles, squash bugs, flea beetles, pickleworm and melonworm, according to Union Carbide Chemicals Co., Division of Union Carbide Corp.

When used in dust formulations it can be used to control striped and spotted cucumber beetles, squash bugs, flea beetles, pickleworm and melonworm, the company says.

Sanitation Expert Joins WHO Staff

SAN FRANCISCO—James C. Allen, staff sanitation consultant for the Cardinal Chemical Co., San Francisco, has received a two year appointment as sanitation consultant for the World Health Organization of the United Nations in the West Indies, where he will also serve as consultant to the British government. He began his new duties on July 1.

Mr. Allen will advise on problems of water, sewerage, insect and rodent control and the control of related diseases. He will be headquartered on Barbados Island, and will travel throughout the West Indies and British Guiana.

The consultant, who joined Cardinal last January, has been instrumental in developing means of control for such food pests as the vinegar fly and stored product insects. He holds a B.S. and M.S. degree from the University of California at Los Angeles, where he later served as sanitarian in the office of the university physician. In 1958 and 1959 he was technical and sanitation director of the Dried Fruit Association of California. He left San Francisco with his wife and two children on June 26.

Mr. Allen will return to the staff of Cardinal when his period of loan to the World Health Organization has been completed, according to James H. Hart, president of the grain pest control supply firm. His replacement in San Francisco has not yet been selected.

Georgia to Use Blowers Against Undesirable Brush

TIFTON, GA.—Six mist blowers have been put into operation by the Georgia Forestry Commission for control of undesirable trees and brush species, announced A. Ray Shirley, commission director.

This operation, added to aerial spraying the commission does, gives woodland owners an opportunity to convert land to pine growth. W. H. McComb, commission management chief, said the mist blower tanks hold 32 gal. of a solution of 2,4,5-T and oil. Approximately 3 to 5 gal. of the solution is used per acre, depending on the growth density. The use of blowers is being confined to areas predominantly in undesirable species. The blowers will not be used in areas where there is danger of damage to established pines.

THE 1960 summer session of the fertilizer section executive committee, National Safety Council, was held in Raleigh, N.C. recently. Shown attending the Raleigh meeting are (left to right): William M. Bethune, North Carolina Department safety inspector; C. S. Griffith of Cincinnati; Marshall E. Petersen of Chicago; Emerson M. Jones of Indianapolis; Mike C. Ellison of Yazoo City, Miss.; Gaither T. Newnam of Norfolk, fertilizer section secretary; Paul T. Truitt of Washington; James W. Smith of Salt Lake City; A. I. Raney of Bartlesville, Okla., fertilizer section vice chairman; Grayson B. Morris of Richmond; Quentin S. Lee of Atlanta; Elmer C. Perrine of New York, fertilizer section general chairman; W. A. Stone of Jacksonville; A. B. Pettitt of New York; Norman F. Maddus of Tampa; John S. Mark of Columbus; William C. Creel of Raleigh; John E. Smith of Pittsburg, Kansas; Stratton M. McCargo of Ithaca; E. O. Burroughs, Jr. of Norfolk, and George F. Dietz of Baltimore.

California Appoints State Policy Group To Study Chemicals Used in Growing Food

SAN FRANCISCO—A special state policy committee has been named to survey the use of agricultural chemicals in food production in California.

The 15 man group was named by Gov. Edmund G. Brown and held its first meeting July 14 in Sacramento. The group was instructed to report to the governor before Jan. 1, 1961. Dr. Emil M. Mrak, chancellor of the University of California, Davis, was named chairman.

Gov. Brown said the group, known officially as the Special Committee on Public Policy Regarding Agricultural Chemicals, was created because of public concern over pesticide and chemical residues in food products.

A clear, consistent, firmly established public policy is needed on this matter, the governor said, and the new committee is expected to suggest any legislation that may be considered necessary.

In addition to Dr. Mrak, the committee includes George A. Gooding, vice president of the California Packing Corp.; Dr. Charles E. Hine, San Francisco city toxicologist; Louis A. Rozzoni, president, California Farm Bureau Federation; Dr. Elwyn Turner, Santa Clara County health officer; Dr. Clinton Thienes, professor of toxicology, University of Southern California School of Medicine; Dr. Daniel Aldrick, dean of the University of California School of Agriculture; Dr. Ralph C. Teall, vice chairman of the Council of the California Medical Assn.; Dr. Wendell Griffith, chairman, Department of Physiological Chemistry, University of California at Los Angeles School of Medicine; John Watson, president of the State Board of Agriculture; Dr. Agnes Fay Morgan, emeritus professor of nutrition, University of California, and three state officials, Mrs. Helen E. Nelson, state consumer counsel; Dr. Malcolm H. Merrill, state director of public health, and William E. Warne, state director of agriculture.

Guy Gubbay to Head Quebec Fertilizers

MOUNT GABRIEL, QUE. — Guy Gubbay of Montreal was elected president of Quebec Fertilizers Inc. at the annual meeting of the association at the Mount Gabriel Club. Mr. Gubbay is Montreal district sales manager of William Houde Ltd.

Guy Gubbay

Other officers elected were: Harold Barrett of Canadian Industries Limited, vice president; Rene Reid, International Fertilizers, executive director; Lorrimer Whitworth, International Fertilizers, secretary; Marcel Roy, Canada Packers Ltd., chairman, agronomic committee, and Arthur O'Donoughue, Cyanamid of Canada Ltd., chairman, advertising and public relations.

Group Votes Opposition To MH-30 Use

WARSAW, N.C.—A group of more than 150 farmers from a dozen eastern counties, meeting here June 28, unanimously approved a resolution opposing the use of "MH-30" (Maleic Hydrazide) for chemical sucker control on tobacco.

Those present also went on record favoring adjustment of the price support program to bring about "total discontinuation" of use of the chemical on tobacco until research has solved the MH-30 controversy.

The resolution, introduced by Robert L. Corbitt of Macclesfield, was passed after representatives of seven independent and export buying firms on the Rocky Mount market had warned that "our customers do not want leaf treated with the chemical."

Trial Progress, Fertilizer Reports Given At South Dakota Agronomy Field Day

BROOKINGS, S. D. — Agronomy field day visitors looked over trials in progress and heard reports on promising new grain and grass varieties and on fertilizer and tillage practices here recently.

O. G. Bentley, dean of agriculture and experiment station director, reported that farmers have improved their efficiency more in the past 18 years than they had in the preceding 120. He added that a high degree of efficiency is necessary if agriculture is to prosper and that agricultural research promotes efficient farming and ranching.

Leo Puhr, agronomist, has found that surface soils that contained 110 lb. of phosphorus per acre in 1942, contained only 35 lb. of available phosphorus in 1958. Each crop was grown continuously on each plot during that period, and all except the stubble and corn stalks of the crops were removed each season.

During the period corn crops took 1,120 lb. of nitrogen, sorghum 1,320, wheat 1,060, barley 700, oats 760 and rye 200.

Mr. Puhr also found when residues were plowed under, corn averaged 50.7 bu. to the acre, oats 59 and wheat 18.7. When no residue was returned the average was 47.8 bu. for corn, 53.4 for oats and 16.8 for wheat.

The highest oat and wheat yields were harvested from plots that had subsurface tillage with residue left on, coupled with an early application of 20 lb. of nitrogen and 20 lb. of phosphorus.

L. O. Fine, agronomist, reported that fertilized corn grows a better root system and the plants thus make more efficient use of available moisture. Fertilized corn removed three fourths inch more water from the four-foot soil profile than the unfertilized and produced 13 bu. more corn per acre.

Mr. Fine said the total weight of roots below the 6-in. soil depth on the fertilized corn was twice that of the unfertilized. Root development in the 6 and 12-in. soil depth was almost four times greater in the fertilized plots than in those without fertilizer.

Fertilization on Grain Crops Results in Much Higher Protein Content

By J. M. MacGregor and R. J. Meade*
University of Minnesota

Nearly half a million tons of commercial fertilizer are now used annually by Minnesota farmers. The primary object is to increase net returns per acre of crop grown; effect of fertilization, plant composition and feeding value is strictly a secondary consideration. Some Minnesota soils have now been cropped for a hundred years, resulting in depletion of one or more nutrient elements. One or more of the elements nitrogen, phosphorus, and potassium are usually needed.

The most obvious effect of fertilization has been increase of crop yields. Fertilizer effect on plant composition is more difficult to assess and is often overlooked. A soil deficient in available nutrient elements will produce a lower yield, and the crop all too frequently contains lower concentrations of the elements deficient in the soil. A change in amounts of other elements is also likely. The addition of the needed element or elements often appreciably influence plant composition as well as yield, and changes in the feeding value of such feeds are not well understood.

For example, nitrogen fertilization of the soil usually increases the amount of nitrogen taken up by nonleguminous plants, such as corn. Since the nitrogen content of plants is expressed as the crude protein content any increase in nitrogen level will result in an equivalent increase in the total crude protein. Protein is made up of 20 or more constituents—collectively known as amino acids. Ten amino acids are essential to nonruminants, such as hogs.

Although nitrogen fertilization may increase the amount of some of these amino acids, the increase in all essential amino acids is not in proportion to the increase in total protein. This unequal effect is shown in the figure, which is based on several years of research at the University. Note that fertilizing increases nonessential amino acids much more than it does essential ones.

This unequal effect varies somewhat with type of crop, climate, yield, soil type, relative soil fertility level, available soil moisture, kind and amount of fertilizer added, and many other factors. Two feed samples are not necessarily equal in composition simply because they are of the same type or even because their total nitrogen content is the same.

Soils deficient in available phosphorus will tend to produce crops containing limited concentrations of this nutrient, especially in the grain where a major portion of this element accumulates. Such a deficiency is likely to extend to animals fed on either forages or grains produced on phosphorus-deficient soils unless the feeder provides a supplemental source of this nutrient. Phosphate fertilizations will usually correct this deficiency in farm feeds, and at the same time produce substantial yield increases.

Even this increase in phosphorus content will not mean that the animal can rely upon grains and cereals alone for the required phosphorus. Some of the phosphorus in cereals will be tied up as phytin phosphorus and not be completely available to some classes of farm animals. Potassium, although not entering into organic combinations in the plant, is used by most plants in large amounts and must be present for normal plant and animal growth.

However, most feedstuffs contain more than enough potassium for farm animals. Therefore, any increase in potassium content of the feedstuffs will not make it more valuable to the animal. It is evident that fertility management and many other factors will have a considerable effect on the composition of feeds grown on the farm. This should be considered when selecting ration supplements which will promote maximum and efficient animal gains.

Ten amino acids are essential for swine. The added protein content of corn resulting from nitrogen fertilization, or any other practice, can be used to replace part of the supplemental protein ordinarily used in swine rations.

However, the producer must keep in mind the "unequal" effect of fertilizing mentioned earlier. Corn higher in total protein will contain relatively less lysine, tryptophan, and methionine—all essential acids—per unit of protein than will corn with "normal" protein levels. So to take advantage of the higher crude protein content of fertilized corn and thereby reduce supplement costs, the producer must select protein supplemental feeds which are relatively high in these essential amino acids.

Research has been reported in which as little as 6 or 7% of protein supplemental feeds was used with corn averaging 10.75% protein to provide rations with 14% protein. Pigs weighed 46 lb. at the start of the experiment and were divided into three groups. One lot received 6.7% fish meal, another was fed 7.6% of a combination of equal parts of fish meal and solvent soybean oil meal, and the third received 6.4% of a combination of equal parts of solvent soybean oil meal and blood meal.

In each case, the pigs gained more than 1.7 lb. each daily. High quality fish meal and blood meal were used because of their added contribution of the essential amino acid lysine. Blood meal alone contributes substantial quantities of both lysine and tryptophan, but is low in isoleucine—another essential amino acid—and pig performance was not as good when blood meal served as the sole source of supplemental protein.

Results of other work have been reported where corn containing as much as 11% protein was used successfully with solvent soybean oil meal alone in rations containing 14 and 16% of protein. The higher level of protein did not improve performance of the growing pigs and addition of lysine, methionine, and tryptophan, alone and in combination, did not increase rate of gain or efficiency of feed utilization.

There probably is a practical limit to the amount of protein which one should try to obtain in the corn, or other cereal grain, for the feeding non-ruminants. In the case of swine, there appears to be little practical advantage at present in having corn containing more than 11 to 12% protein. Corn containing more will require very nearly as much protein supplement, because of the problem of relatively lower quality of protein in the higher protein corns.

It is conceivable that, in time, crystalline amino acids might be used satisfactorily to supplement corns containing more than 11 to 12% of protein; however, these crystalline amino acids are not generally available as yet and are too expensive to be practical in most instances.

Ruminants, because of their less critical requirements for high quality protein, are able to make excellent use of the added protein of grains containing more than the "usual" amount of crude protein. Experiments have been reported in which fattening steers gained as rapidly and as efficiently on a high protein corn and roughage ration as did steers fed a ration based on corn of average protein content, roughage, and a protein supplement. As with the pig there is probably a practical limitation to the amount of protein which producers should try to achieve.

Fattening lambs and steers will not require more protein than is supplied by grain containing 11 to 12% protein and there is little point in pushing the protein content of the cereals so high that total yield of grain per acre is decreased.

*Professor, soils, and professor, animal husbandry, respectively.

New Pesticide Officer

OTTAWA—W. S. McLeod, officer in charge of the Canada Department of Agriculture's pesticide testing laboratory here for the past eight years, has been appointed supervisor of the pesticide unit, plant products division. He succeeds C. H. Jefferson, who recently was named chief of the division's Feed, Fertilizer and Pesticide Section.

Mr. McLeod graduated with his B.Sc. from the University of Alberta in 1939, and received his M.Sc. degree from Macdonald College (McGill) in 1943.

DUSTING FIRM OPENS

FRESNO, CAL.—A new crop dusting firm recently opened its doors here. Lawton Crop Dusters, Inc., owned by Marion P. Lawton and Bernice A Lawton, Fresno, has been capitalized for $25,000.

TONNAGE REPORTS

Oklahoma

STILLWATER, OKLA.—Fertilizer sales in Oklahoma during May amounted to 17,164 tons, or 2,790 tons more than May of 1959. Most popular grade was 10-20-10, with 6,430 tons being sold.

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Kentucky

LEXINGTON, KY.—Kentucky fertilizer sales during April were 144,047 tons, compared with 130,518 tons during the same month in 1959, reported the Department of Feed & Fertilizer, Kentucky Agricultural Experiment Station. Most popular grade was 5-10-15 with 22,497 tons sold.

●

Arkansas

LITTLE ROCK, ARK.—The State Plant Board here reports that 35,752 tons of fertilizer were sold during May, or 6,849 tons less than the same month in 1959. Most popular grade was 0-24-24, with 4,597 tons being sold.

●

Florida

TALLAHASSEE, FLA.—Fertilizer consumption in Florida during May, 1960, amounted to 248,914 tons, reported the fertilizer statistical division of the State of Florida Department of Agriculture. This total consisted of 172,315 tons of mixed grades and 76,599 tons of fertilizer materials.

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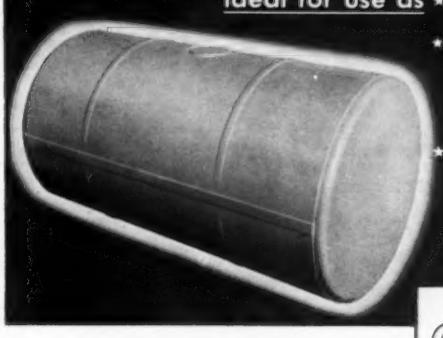

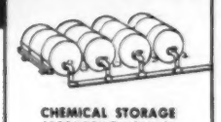
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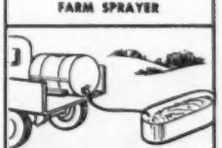
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INSECT, PLANT DISEASE NOTES

Rains Start in Texas; Insect Buildup Follows

ABILENE, TEXAS—After several weeks of dry weather in parts of Texas, the rains came back, and with them the insects. Fleahoppers are building up in West Texas cotton fields. Heavy to medium infestations have been reported in several counties. Also thrips, a companion insect to fleahoppers, are increasing steadily.

Grasshoppers have been working for several weeks now, but farmers are keeping them in check with a controlled poisoning program.

In the Gulf Coast area farmers are finding that the sugar cane borer is attacking corn and grain sorghum fields. At the Angleton Experiment Station there has been a 100% infestation in corn plots.

Still another insect long familiar to Texas cotton farmers and now back for a return engagement is the boll weevil. Reports from many parts of the state show that the first generation of weevils are now working the crop. Most of these were hatched from eggs which were laid by the hibernating weevils of last winter.

Fire Blight Hits California Pear Trees

SACRAMENTO — Fire blight has reached serious proportions in pear trees in the Sacramento area, according to Harry B. Tucker, Sacramento County farm adviser.

Mr. Tucker said the initial spread of the disease results from the activities of flies, ants and beetles transporting bacterial oozes from holdover limb or trunk cankers to early blossoms. The responsible bacterium is Erwinia amylovora.

Georgia Declares War On White-Fringed Beetle

ATLANTA, GA. — An all out war has been declared in Georgia against the state's most potentially dangerous insect pest, the white-fringed beetle, the State Department of Agriculture reported.

W. E. Blasingame, entomologist, recently said that eradication has been completed in 23 of 77 Georgia counties known to have been infested.

The result, Mr. Blasingame explained, has been achieved with an expenditure of $50,000 of state money, matched with an equal sum of federal funds. The appropriation ran out in June, but the entomologist is hopeful that more financing will be available by fall or winter, seasons of the most intensive fight on the beetle.

The entomologist calculated that some 200,000 Georgia acres remain infested but that with the expenditure of from $3.50 to $4 an acre all could be cleared of the potentially disastrous pest. That would amount to only about $800,000 at the most.

The official would not speculate on the possibility of getting enough funds immediately to finish the eradication.

The state entomologist gave the following compilation of the beetle status in key Georgia counties:

All known infestations treated in Muscogee and Tift.

Eradication 90% complete in Richmond, about 283 acres remaining for treatment; Clark County, 50 acres yet to be treated; Colquitt, 518 acres remaining; Chatham, 30 acres remaining.

Relatively heavy infestations exist in Bibb, 51,807 acres; Fulton 2,449, and Sumter, 3,427 acres. No infestations are in Bartow, Floyd, Thomas, Lowndes and Ware counties.

Heavy Crown, Root Rot Infestation in Ohio

WOOSTER, OHIO — There's a black villain hard at work in Ohio's red clover fields, plant pathologists of the Ohio Agricultural Experiment Station and Extension Service report. A favorable winter has brought on the worst infestation of Sclerotinia crown and root rot in years. It is most rampant in southern Ohio where some fields have been almost completely destroyed.

A. F. Schmittener and Blair Janson say the Sclerotinia organism which is peculiar for the black wads of fungus material that form in dead or dying plants, damages legumes each winter and early spring. But the mild early part of the winter followed by the heavy, insulating snows of March made a particularly good environment for the fungus to develop.

The fungus is not to blame for all the dead clover in Ohio this year. Death from this fungus can be easily confused with death from freezing. The distinguishing characteristic of fungus attack is the small, black particles of fungus material in or on the dead clover plant. The fungus hits hardest on young clover plants. On one farm it destroyed 80% of a stand seeded last spring, the pathologist noted.

Alfalfa is not as susceptible as red clover to Sclerotinia, and grasses are immune. The leaves and stems of the legumes are infected in the fall, then during the winter and early spring the fungus grows into the crown and roots, causing the plants to become mushy. A heavy kill of plants can take place even before spring growth begins.

Usually the disease is not detected until the growth suddenly wilts and dies. In April, when it is usually rainy, a dense growth of mycelium spreads over the dead plant parts. After this, the hard sclerotia develop.

Aerial Spray Liquidation Tried on Oregon Hoppers

SALEM, ORE. — Representative Willamette Valley bentgrass seed producers in the Union Hill and Waldo Hills area southeast of Silverton, Ore., recently made an attempt to control a big grasshopper invasion by airplane spraying.

One large grower reported that with the harvest still some three weeks away, a great deal of damage could result unless the insect hordes are controlled. The last big outbreak was eight years ago.

The bentgrass crop is fully 3,000 acres down from last year because of velvetgrass getting into fields, according to C. M. Brownell, Valley Farmers Cooperative manager.

Missouri Corn Damaged By Garden Webworms

COLUMBIA, MO. — Garden webworms continue to damage small corn in several of the southwestern counties. These worms are very common on pig and careless weeds and as soon as these weeds are cultivated or sprayed out, increasing webworm damage to the small corn will occur.

In several of the southwestern and west-central counties where heavy rains have not occurred, chinch bugs are causing light to severe injury to small corn and grain sorghums. Fields of corn and grain sorghums will show signs of chinch bugs, particularly those fields that border small grains.

Since most of the migration from small grains to corn has already been completed, controls should now be concentrated on the plants that are infested.

Nevada Water Shortage May Change Insect Habits

RENO, NEV.—The shortage of water in Nevada this year may cause various insects to leave the dry range to seek green fields and trees, according to Robert W. Lauderdale, entomologist, University of Nevada College of Agriculture.

Mr. Lauderdale particularly warned against sucking type insects such as aphids, spider mites and stink bugs. Control measures generally are not necessary for these insects since they stay in their own element, but because of the drouth their habits may change this year.

The university entomologist reported that crops and trees already are under stress because of the water shortage. If the insects start tapping plants and trees for moisture, additional problems will result.

Varied Insect Group Observed in Wisconsin

MADISON, WIS. — The concern about grain aphids present in almost all fields during the past few weeks now appears to be subsiding except for some fields in northeastern Wisconsin where plantings are less advanced. Reports and observations for this area indicate aphid populations, while slightly retarded, do not differ greatly from other sections.

In all fields examined, the English grain aphid has been and continues to be, by far, the most dominant species; and injury caused by all aphid feeding is classed as light.

Plants showing reddened top leaves indicative of infections by the red leaf virus disease of oats, which grain aphids transmit, have been scarce in general. However, recently, fields with the greatest numbers of infected plants observed to date were found in southeastern Wisconsin.

Plants show symptoms about three weeks after inoculation.

If stunted corn plants in fields of uneven growth are pulled and the roots examined, the presence of corn root aphids can be determined. The corn root aphid was included in an earlier soil insect report, but a heavily infested Green County field was reported after this. Ants around the plants also indicate the presence of the corn root aphid. Ant populations, in general, seemed high in 1959 and again this spring. It appears this may be a year when the common stalk borer will cause some wilting of corn plants in field margins.

Very few ½ in. armyworms were found in lodged portions of a Walworth County barley field, and very few mature armyworms were found in Walworth County corn. The same low numbers were found in alfalfa sweepings in the same area. Peas, small grain and corn should periodically be checked for armyworms in order that timely treatments can be applied if necessary. It appears that if armyworm problems occur, the time will be somewhere between the 10 to the 20th of July in southern and western parts of the state.

Black cutworm feeding appears to be subsiding in corn in the Mazomanie area where pupation is now reported to have begun. In a Marquette County corn field, the black cutworm caused a 10% reduction in plant population.

European corn borer leaf feeding was seen in the few advanced fields observed in Walworth and Green counties. For a Walworth County field examined (40 in. extended height), there were three egg masses per 25 plants. Rochelle, Ill., reported 25-35 egg masses per 100 plants of sweet corn planted on May 18-20. Hatched egg masses range from 4-16 per 100 plants, and blackhead egg masses 5-16 per 100 plants. Development with a day or two lag in southern Wisconsin is probably comparable except for a much lower infestation. Moth counts, while higher northwards, will have difficulty finding corn where borers will survive.

Pea aphid counts are not included in this report because most were made prior to June 29. On Monday, June 27, counts ran high (40-50 aphids per sweep for 15 in. peas) enough to schedule treatments for a considerable acreage. While the total precipitation varied, forceful rains prevented scheduled treatments, and counts dropped (15-20 aphids per sweep) to a point where the scheduled treatments were abandoned. Treatment continued where populations were not radically changed by

GRASSHOPPER SPRAY CONTRACT AWARDED

CHEYENNE, WYO.—A contract has been awarded for spraying of some 3,000 acres of pastureland near Thermopolis for grasshoppers, according to Everett W. Sprackman, state entomologist.

William T. Kirk, state agriculture commissioner, called the area a "hot spot." He said officials were hoping to isolate the hoppers to keep them from spreading to adjacent areas.

"We are checking other areas according to last year's surveys," said Mr. Kirk. "But so far we haven't found anything."

The contract for 30¢ an acre was awarded to Christler and Avery Aviation of Greybull. Mr. Sprackman said the cost will be shared by the county, state and federal governments.

The officials warned there is also a possibility of some infestation in Johnson County and in the Big Horn Mountains.

Although evidence of hoppers has been small, Mr. Kirk said a few hoppers could create a bad situation because of the dry conditions in many parts of the state.

heavy rains. Development of the pea aphid population was slow in fields unaffected by rain including treated acreages.

In southeastern alfalfa sweepings, fields in different stages of regrowth showed the effect of pea aphid migration and developing populations: 10 in. alfalfa—5-6 aphids per sweep; 8 in. alfalfa—10 per sweep, and 6 in. alfalfa—5 per 10 sweeps. Parasites and predators were abundant. Pea aphid infestation of some new seedings was reported.

Meadow spittlebugs are reported as numerous in Shawano County and counts ran as high as seven nymphs per 10 stems. Adults are common and migration to many crops other than alfalfa is underway in southern and western counties.

In all the alfalfa examined in the counties of Waupaca, Waushara, Walworth, Oconto, Rock, Racine, Dane, Shawano, Marinette, Outagamie, Marquette and Portage, there were alfalfa plant bugs with varying portions of the population in the adult and nymphal stages. In general, alfalfa plant bugs appear to be numerous and greatly outnumber rapid plant bugs, also common in many fields.

Potato leafhopper adult populations have risen in many alfalfa fields. This can be explained only by repeated out-of-state migrants being added since there has not been sufficient time for the reproduction by first migrants of the season to reach the adult stage.

Smog Disease Threatens California Grape Crops

RIVERSIDE, CAL.—Grape stipple, a disease caused by ozone, an invisible component of smog, presents a serious problem to growers in southern California.

Symptoms of the disease are dark, spot-like lesions on the upper surface of the leaves resulting in bronzing, yellowing and, finally, in premature leaf fall. The symptoms have been found on all common grape varieties grown in southern California.

Stipple was first noted near San Bernardino and has since been found generally distributed in grape growing areas throughout Los Angeles, San Bernardino, Orange counties and in the western part of Riverside County. It has also been reported in the vicinity of Concord and Walnut Creek in Contra Costa County.

Toxic levels of ozone are reported by scientists to occur in the polluted air mass in the Los Angeles and San Francisco areas where stipple is found.

The disease was reported recently by three University of California scientists: B. L. Richards, research associate, Riverside; John T. Middleton, professor of plant pathology, Riverside, and W. B. Hewitt, professor of plant pathology, Davis.

Indiana Reports Pests On Orchard Sites

VINCENNES, IND. — Peach tree borers have started to emerge. The first trunk spray for their control should be applied preferably by July 20. Precautions should be observed while spraying tree trunks not to contaminate the fruit on low limbs.

The period for the second spray application for lesser peach tree borer is at hand. Adults of this pest are active in the Vincennes area from June 1 to October, whereas adults of the peach tree borer are active July 1 to September.

Second-brood adults of Oriental fruit moth (those that cause third-brood worms) started coming to bait traps in one orchard July 8. No second-brood captures, to date, in a second orchard. Flight increase expected about July 15. Protection especially needed July 18 through 26.

Codling moth first-brood moths, those that lay second-brood eggs, started emerging in the insectary June 27. Emergence has been especially heavy since July 5 and is nearing peak. Activity in the orchards is lagging behind the insectary records. Oviposition expected to increase by July 16 so that protection against second-brood larvae will be of special importance from July 20 through 30.—D. W. Hamilton.

Dutch Elm Disease Rises in Wisconsin

MADISON, WIS.—The number of Dutch elm disease cases diagnosed thus far in 1960 by state plant pathologists has jumped to 527, with 173 in the latest one-week period, the state has reported.

New cases have been reported from Stoughton and Oconomowoc Lake. Diseased trees have been found this year in 34 municipalities in eight counties. Future increases are expected by the laboratory as the European elm bark beetle continues to emerge to spread the disease.

Corn Borer and Other Pests Make Headlines

AMES, IOWA—The most important pest of the week of July 11 was the European corn borer. Predictions made earlier have been confirmed. Much corn growing in fertilized fields in most parts of Iowa is showing early enough leaf feeding to justify treatment. Corn 60-70 inches tall in Louisa, Muscatine, Washington, Keokuk and Poweshiek counties had 52% to 88% leaf feeding with 52 to 744 borers per 100 plants.

The common stalk borer was reported in field corn in Cass, Adair, Shelby, Louisa and Dallas counties and in tomatoes in Muscatine County. The larvae are ¾ inch long, have a light yellow head, white lengthwise stripes and a dark ring around the body about ⅓ of the way back of the head. When the larvae are full-grown they lose the stripes and most of the ring and look like a gray cutworm. These are common in giant ragweed. Adults emerge in August and lay eggs for next year's borers in grass and weeds. The larvae now present in corn plants will stay there. They have no further need to migrate.

In spite of all the rain, there are 5-7 2nd to 4th instar nymphs of the differential grasshopper in roadsides and fence rows in southeast Iowa. There is no crop damage at present. If warm, wet weather continues, fungus disease will kill most of these grasshoppers.

Plot examinations recently showed corn rootworms ranging from 3/16 to full-grown (½ inch). One pupa was found in the Kanawha plots.

NAMED REPRESENTATIVE

STAYTON, ORE. — Dave Durling, formerly with Swift & Co. at Spokane, Wash., has been named field representative for the firm's commercial fertilizers in this area.

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Outline of Progress...

USDA Scientist Calls Chemicals 'Basis of Healthful Food Supply'

By W. L. Popham*

Deputy Administrator
Agricultural Research Service
U.S. Department of Agriculture
Beltsville, Md.

IN THE next 15 years the population of the U.S. is expected to grow by some 50 million people—to a total of about 230 million. Economists say that to provide these people with the diets they will need, we will have to produce 63% more red meats; 38% more milk; 31% more eggs, and 57% more fruits and vegetables. . . . And by the year 2010 we may have 370 million people—or more than twice our present population.

We may be worrying now about surpluses in a few basic crops, but if agricultural research is going to keep pace with current trends in population—and help us to maintain in the future even our present living standard—we must not let ourselves be misguided and overcome by the apparent complexity of the problems we face today.

Where is the additional food we'll need by 1975 coming from? Not from new acreage—more acreage will be difficult to add. Further mechanization will help, but that's only a partial answer. New varieties of crops will be some help, no doubt—but can we anticipate new varieties of potatoes, corn, beans, or alfalfa which will produce two bushels where one now grows? Some one always comes up with the answer—we say. Maybe so—but it's not healthy for either scientists or farmers to be working in an atmosphere of fear.

Eighty years ago my immediate forebears moved to the Far West. It wasn't their privilege to make a choice—it was their parents who had an idea—away from the "crowded" areas of the East—out where there was land for everyone—virgin soil—plenty of water—all the elements necessary for a bountiful harvest. What could be more challenging?

In the Reconstruction Period following the war between the states, business was booming—industry was attracting more and more people to town. The man on the farm had not only to feed his own family, but also to provide for at least three or four others.

The period from 1900 to 1914—the beginning of World War I—was a time of prosperity and great advancements in agriculture. The farmer began to specialize. He had graduated from the "heel burner" to the riding plow—it required an extra horse or mule, but things were going pretty well and he could afford that luxury. Anyone in town or on the farm—if he would work 10, 12 or 18 hours a day—had ample food and was well clothed. Optimism prevailed.

Then came 1916—a critical time in World War I. Able-bodied men in the service—the world clamoring for food and machines of destruction—then what happened? We had the worst outbreak of black stem rust of cereals ever experienced in this country. The impact of other pests was being felt. The result—black bread and rationed sugar.

After the war—another adjustment. In the mid 20's, M. L. Wilson of ever-normal granary fame—later to become Under Secretary of Agriculture and serve as Director of Extension, was advocating the big team hitch—heralded as a great labor-saving device on the farm. One man would handle 12 to 20 horses—plow 20 acres a day instead of three.

The record shows that about that time there were some 20 million horses and mules on farms—one for every five men, women and children in the country.

But times were changing fast. The automobile had become commonplace. M. L. had no more than gotten all his horses pulling in the same direction when the tractor began to take over. Mind you, that was only about 35 to 40 years ago. Then came depression compounded by drouth. Every banker in the West was convinced beyond reasonable doubt that the iron horse and the mechanical harvester had ruined the nation. In the South it was the boll weevil, the cattle tick and malaria.

A number of crops vital to the welfare of the colonists could no longer be grown profitably east of Ohio because of insects and diseases for which no effective controls were available.

Fruit, vegetable and cotton growers were waging a losing battle against their age-old enemies with arsenic and nicotine—somehow we muddled through—people kept living longer—and doctors kept favoring us with new reasons to die—because after all, we do have to die.

Out of the depression—a most drastic leveling-off period—came repeal of the 18th Amendment. Faster automobiles, more and bigger tractors, hybrid corn, chemical fertilizers, and green manure crops, to offset the soil-building by-products of the rapidly disappearing horse—hypertension and cirrhosis of the liver, viruses A to X, and cancer to partially keep in balance those saved from TB, malaria, smallpox, diphtheria, and scarlet fever.

Then came World War II and the Pentagon. There were exercises for everyone—long hours, gas rationing, food stamps, victory gardens, airplanes everywhere. Young men left the farms by droves only to find upon return further mechanization—bigger and better milking machines, cultivators, mechanical harvesters, power sprayers, herbicides, fungicides, weed killers had taken over. One man on the farm fed himself and about 15 others.

Meeting the food requirements for a population increase of three and a half million a year was no problem—thanks to chemicals along with refrigeration and other improvements in the production, processing and handling of food.

Increased acreage is only a partial answer to food requirements for tomorrow. Technology is our new frontier—technology coupled with imagination and confidence.

But something important had happened during the war. A group of young scientists headed by E. F. Knipling, in a make-shift laboratory at Orlando, Fla., worked out a procedure for saving the lives of more men than the enemy could have disposed of had the war lasted 10 or even 20 years. DDT in the hands of these same farm boys—and their city cousins—with instructions to treat your tent, treat your blankets, treat the wall of the mess hall, treat everything. Spray planes hit the beaches ahead of landing forces—nobody cared whether it was two parts per million or a hundred pounds per acre. It did things to mosquitoes, biting flies, and other vectors of ravaging diseases to be found in tropical areas of the world. Can you point to the first man who was harmed, or even complained of being allergic to the stuff? This, mind you, is 15 years ago.

Each of us had a job to do—I wonder if we recognize it for what it really is. If we can not compete in the chemical age—if we are unable to develop satisfactory, reasonable and safe guidelines for scientific advancement, perhaps we had better step aside—join the "do-gooders"—and let those who are anxious and willing tell anyone who will listen—exactly "how to run a railroad." Quoting Mark Twain—"There is something fascinating about some kinds of science—one gets such wholesale return of conjecture out of such a trifling investment of fact."

If we are going to progress we must act in an intelligent manner—on the basis of what we know—not on the basis of what we don't know. The unknown is one commodity that will always be in surplus!

When it comes to the "Responsibility of the Department of Agriculture for Use of Chemicals in Agriculture," it is our responsibility that the people of this country derive maximum benefit from chemicals used on the farm. To do this, of course, they must be used safely. Chemicals are an essential production tool. They proved our "frontier" in time of most urgent need. If we are to continue producing the food we need, in the variety and quality we want, we have no immediate substitute for chemicals. In my book we have the competence to deal with them in such a way as to derive full benefit without harm to anyone. We have no alternative but to recognize that chemicals are essential to our well-being, can be used safely and offer our most promising answer to adequate food for the future.

Both the Department of Agriculture and the Department of Health, Education and Welfare have certain functions to perform in assuring a safe and wholesome food supply. USDA repsonsibilities are set forth in a series of statutes assigning specific regulatory functions to the Department of Agriculture. These are:

1. The Meat Inspection Act of 1906.
2. The Insecticide Act of 1910.
3. The Agricultural Marketing Act of 1946.
4. The Federal Insecticide, Fungicide and Rodenticide Act of 1947.
5. The Poultry Products Inspection Act of 1957.
6. Public Law 86-139 of 1959, which extends coverage of the Federal Insecticide, Fungicide and Rodenticide Act to include nematocides, defoliants, desiccants and plant-growth regulators.

In addition to these laws, which involve only the Department of Agriculture, the department was assigned certain responsibilities under Public Law 83-518, the Miller Amendment to the Food and Drug Act. This act provides for the establishment, by the Food and Drug Administration, of safe tolerances for pesticides that may leave residues in or on raw agricultural commodities at time of marketing.

In recent years the trend in the Congress has been toward prescribing more pre-clearance of chemicals in dealing with possible residues or other forms of food contamination. This is good—it serves two purposes. (1) It gives greater assurance of safety to the consumer. (2) It gives food producers, processors and distributors more precise guidelines for assuring the safety of their products.

Being a regulatory man I can't pass up this opportunity to rationalize our aims and objectives with the spirit of the times.

Approximately 50% of the more destructive agricultural pests in this country are of foreign origin. Among them are: The European corn borer, the boll weevil, Mexican bean beetle, gypsy moth and the Japanese beetle. Those who generalize about the balance of nature please take note—if it hadn't been for the carelessness of man, these and many other pests and diseases that plague us today wouldn't be here to contribute to the imbalance we hear so much about. Of the 100 most destructive pests introduced in the past 50 years, only about 15% have become established in the past 25 years. This record is good—must be improved—and will be — as our port-of-entry work is strengthened, and the cooperative Federal-State insect and plant and animal disease surveys become more fully operative.

Once a new pest of destructive potential—or a disease of livestock—becomes established in this country, we have no practical choice but to contain and eradicate it if possible. Preventive medicine is good medicine.

In the past 30 years we have eradicated the Pariatoria date scale, citrus canker, the citrus blackfly, the Hall scale, the Texas fever tick and the Mediterranean fruit fly on two different occasions. Insect-borne diseases such as malaria and typhus are no longer a major problem because we have successfully controlled the insects that transmit them.

Our joint efforts with the state of New York have confined the golden nematode, one of the world's most destructive pests of Irish potatoes, to a small area on Long Island for a period of 15 years or more. During this time we have been constantly pressing for a treatment that would achieve eradication. Such a treatment appears to be close at hand.

The khapra beetle has reached the search and treat stage. Of the 709 infestations found as of March 31, totaling more than 169 million cubic feet of storage space, only 14—in California and Arizona—representing some two million cubic feet, remain

*Paper presented at USDA Symposium on "Nature and Fate of Chemicals Applied to Soils, Plants and Animals," Beltsville, Md., April 27, 1960.

CROP ROTATION OVEREMPHASIZED?

OKLAHOMA CITY, OKLA.—Agronomists of Oklahoma State University, Stillwater, have opined that the importance of growing green manure crops or crop rotations for building up soil organic matter may have been overemphasized in the past.

Prof. L. W. Reed believes that farmers may be able to realize greater returns from their farming operations by using one-crop system, supplemented with adequate fertilizing. Studies show that the value of high organic matter levels in the soil to preserve nutrient value, particularly nitrogen, may not be as important as previously supposed. Research indicates it is more economical to maintain nitrogen levels with inorganic fertilizer. Straw from small grains should be left on the soil surface after the harvesting operations. These residues aid materially in erosion control.

to be fumigated. Additional infestations will undoubtedly be found; however, eventual eradication now seems assured.

The spread of the gypsy moth has been stopped. Infestations once established in Michigan, Ohio, Pennsylvania and New Jersey no longer exist or will be treated this year.

The white-fringed beetle infests less acreage now than at any time in the last 20 years. Infestations in New Jersey and South Carolina have been eliminated. Substantial progress is being made elsewhere.

No cases of the screwworm of livestock have been found in the southeastern part of the U.S. since the middle of February, 1959. Normally tens of thousands of cases would have occurred since then.

Those close to the problem feel that the witchweed can be stopped and eventually eradicated.

The Mexican bean beetle, a most destructive and difficult pest to control, became established in California in 1946. Nine years later, and at a cost of some two and a half million dollars, it had been eradicated at state and county expense.

By the intelligent use of interstate quarantines, West Coast states have been kept free of such pests as the Japanese beetle, corn borer, apple maggot and the plum curculio, to name only a few.

Short of eradication, continued and persistent effort has slowed the spread of the pink bollworm, the Japanese beetle and, more recently, the imported fire ant.

Ways have been found to confine the sweetpotato weevil, the phony peach disease, and peach mosaic to a small part of the area they would normally occupy.

The Mexican fruit fly has been kept out of California and Florida, and from becoming a major consideration in the production of citrus in the lower Rio Grande Valley of Texas.

We now have procedures for preventing catastrophic outbreaks of grasshoppers which, in a number of instances in years past, have prompted joint resolutions in Congress and in state legislatures.

Outbreaks of the foot-and-mouth disease have been eradicated on nine different occasions, thus protecting both our livestock and game animals from a most costly and destructive disease. Vesicular exanthema has been eliminated after spreading to 42 states. And now the Southeast has been freed of the screwworm.

It is impossible to interpret in dollars and cents what the control or eradication of the malarial mosquito, the Medfly, the Texas fever tick and the screwworm has meant to agriculture and to the general economy of the South.

A major factor in this progress has been the availability of new and effective chemicals combined with positive thinking and action. Had we waited for all the answers before undertaking these programs, we would still be waiting. We learn as we progress—we have had to be alert to pitfalls, and to the opportunities for modifying program procedures as new information became available. A constant review of operational procedures is essential.

In many of his operations a farmer can work independently—what his neighbor does has little effect on what happens to his crop—but one farmer can not harbor an infestation of pink bollworm, the screwworm, or Mediterranean fruit fly without creating a situation of profound concern to his neighbors. These are not problems to be dealt with on an individual basis. Farmers are coming to recognize this and have turned their thinking more and more in the direction of animal disease and pest control on an area basis. This is a healthy trend—one to be encouraged.

NORTHWEST

(Continued from page 1)

wider range of adaptation and seasonal production of grasses to realize the maximum benefits from this combination.

"Selection of species that will take advantage of the environment (climate, soil conditions, and methods of utilization) is important in getting the most from grass-legume mixtures."

Mr. Jackson was followed by C. Wayne Cook, Utah State University, Logan, who discussed tests made in the Benmore, Utah, area in late 1957 and early 1958 and 1959.

"Applications of fertilizers at the rate of 40 and 20 lb. an acre of available nitrogen and phosphoric acid were applied separately and in combinations of high with low rates of each," he said. "One check plot was left in each replication. Two replications were applied in each of four pastures. Two pastures of crested and two pastures of pubescent wheatgrass were fertilized.

"Nitrogen—even at low rates, increased yield. Nitrogen and phosphorus at 40 lb. each produced about 400 lb. more per acre than the check plots during the first year of application. There was only a very slight carry-over of effects of nitrogen on yield and none for phosphorus. The growing seasons of 1958 and 1959 were both below normal.

"Utilization was determined on July 8 and again on July 30, 1958, when livestock were removed. It was found on both dates that utilization was significantly higher on the plots where nitrogen was applied; and the greater the nitrogen application, the greater the utilization.

"During the second year on these same plots, utilization was determined on July 29, 1959, when livestock were removed. It was found that utilization was again significantly higher on the plots where nitrogen was applied; and the greater the nitrogen application, the greater the utilization.

"The chemical content and the nutritive value were markedly affected by the application of fertilizers. The increase of protein by the application of nitrogen was the most obvious and the more nitrogen applied, the higher was the content of protein in the herbage. The differences in nutrient content among the fertilized plots were considerably higher earlier in the season than later in the season.

"Because of the increased production and the increased protein content on the nitrogen-fertilized plots, the total pounds of protein per acre were substantially higher on these plots compared to the checks and the phosphorus-fertilized plots."

Range fertilization studies on the Red Bluff Research Ranch was the subject of the next panelist, George Van Dyne, Montana State University, Bozeman. Mr. Van Dyne said that under the conditions of the study at the end of the first year's investigations, the following conclusions appear warranted:

1. Various species of range plants react differently to fertilization in terms of production and cover characteristics.

2. Nitrogen fertilizer produced increased yields of most grasses but not of most forbs.

3. Phosphorus fertilizer did not increase yields of the range plant species in the study area in the first year following fertilizer applications.

4. Cover of blue grama grass and perennial grasses as a group was benefited by nitrogen fertilization but other cover variables were not influenced.

5. Phosphorus fertilizer did not significantly influence the ground cover of any variable in the first year.

6. Protein and phosphorus contents of the forage were significantly increased by nitrogen fertilization while phosphorus fertilization significantly increased the phosphorus content of the forage.

7. Forage palatability was not significantly increased to cattle during late summer by fertilization but nitrogen fertilized plots were observed to be utilized more intensively by cattle during the winter grazing.

8. The results of this study indicate a need for further study on the factors which were measured in addition to measurements of winter palatability, length of green feed season, soil moisture changes, soil-plant relationships, and more detailed study of individual species as influenced by range fertilization.

Buck Wilson, ranch manager from Newcastle, Wyo., talked on "Cinching the Gains from Fertilization" to round out the panel discussion.

Another panel discussion, led by moderator Bill Brissenden, J. R. Simplot Co., Pocatello, Idaho, covered the subject, "Fertilizer Effects in Mountain Meadow and Irrigated Pasture Production." Taking part in the discussion were Rulon Lewis, soil scientist, Soil and Water Research Conservation Research Branch, Agricultural Research Service, University of Wyoming, Laramie; Weldon Dimond, mountain meadow ranch owner and operator, Cokeville, Wyo.; Robert W. Van Keuren, agronomist, Washington State University, Prosser, Wash., and Wayne Naugle, farm operator, Nampa, Idaho.

Important points brought out in the discussion included Mr. Lewis' statement that nitrogen fertilization has given large increases in yield and quality of hay when used with higher-yielding forage species and adequate water control. When considering only hay tonnage, the 80 lb. nitrogen applications gave the most economical returns, he said. However, when protein content was also considered, the 160 lb. rate of nitrogen paid best.

Mr. Dimond said, "Without nitrogen we cannot raise a crop of hay under the conditions of our ranch operation. The nitrogen not only raises a heavy crop, but causes faster growth. It also stimulates the grass growth to such an extent that the weeds become smothered.

"To apply the nitrogen we like to wait until the growing weather. We then soak the soil thoroughly by irrigating and apply the nitrogen as soon as the water has drained off. We have not set a definite amount of nitrogen per acre as yet, as some land is used differently than others. However, approximately 100 lb. of nitrogen per acre is used, usually as ammonium sulphate. On some pastures we apply nitrogen in July for a fast second growth."

Mr. Naugle said that by applying the fertilizer in the fall or winter they have grass at least two weeks earlier in the spring. They usually split the application with the second about the last of June or first part of July. He felt it is important to control the ratio of grass and legumes. They do this by varying the ratio of nitrogen and phosphorus, more nitrogen to increase the grass and more phosphorus to increase the clover.

Mr. Van Keuren said with good management and high fertility the returns from irrigated pastures have been shown to compare favorably with many other crops grown in the area.

Luncheon speaker on July 13 was

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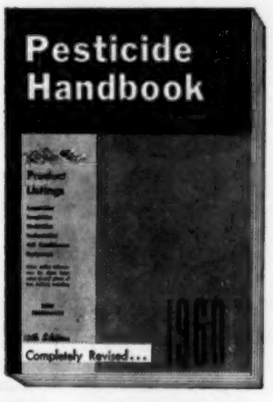

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about the editor—

Dr. Donald E. H. Frear, Editor of PESTICIDE HANDBOOK 1960, is one of the leading authorities on the chemistry of pesticides. He is the author of "Chemistry of Insecticides and Fungicides," the first book dealing with this subject published in the United States. In addition, he has written several other books, including "Chemistry of Insecticides, Fungicides and Herbicides." Dr. Frear is Professor of Agricultural and Biological Chemistry at the Pennsylvania State University.

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C. E. Kellog, Agricultural Research Service, Beltsville, Md., who talked on "The Fertilizer Program and Bench Mark Soils of the U.S."

A tour of the agronomy farm at Utah State University, led by Roy Lipps, U.S. Steel Co., Salt Lake City, was one of the highlights of the second day.

July 14 luncheon speaker was D. G. Aldrich, dean of the University of California, who reported on "Zoning of Land for Agriculture."

Dr. Royal M. Garff, marketing department, University of Utah, was the evening banquet speaker. His talk was entitled, "Glue, Glee and Gumption in Selling."

Other speakers included Rex F. Nielson, Utah State University, reporting on "Phosphorus and Potash Status of Utah Soils as Shown by Plant and Soil Analysis."

"A survey has been in progress the past 8 years to determine the phosphorus and potash status of Utah soils," Mr. Nielson said. "A total of 617 locations representing all the major soils of the state have been sampled. All samples were collected from fields growing alfalfa. Sampling procedure involved collecting a 0 to 6 in. soil sample and a plant sample from the same site just before the first crop alfalfa was harvested. Soil samples were analyzed for bicarbonate soluble phosphorus and ammonium acetate soluble potash. Plant material was analyzed for total phosphorus and potassium. Soil series and condition of the crop were noted for each sample site.

Analysis of the data shows phosphorus deficiencies occur in various areas throughout the state. These deficiencies are related in part to geographic areas and soil series. The effects of previous fertilizer practices and cropping history are evident at many locations.

"The data on potassium illustrates the abundance of this element present in Utah soils. In addition many streams used for irrigation contain large amounts. Although no deficiencies were noted, the data shows that the coarse-textured soils will probably be the first to become deficient."

Jay L. Haddock, Utah State University, examined the "Influence of Nitrogen and Phosphorus Fertilizers on the Yield and Chemical Composition of Alfalfa."

He said, "Yield of first year alfalfa hay was increased by 44 lb. of phosphorus and decreased by an application of 80 lb. of nitrogen per acre two years previous to observation. Untreated soil under these conditions contained 65 ppm of incubated NO_3-nitrogen and 15 ppm of sodium bicarbonate soluble phosphorus. During the following year, second year alfalfa gave a similar response to the residual treatments. Untreated soil contained 66 ppm of NO_3-nitrogen and 22 ppm of sodium bicarbonate soluble phosphorus.

"Application of phosphorus fertilizer on the soil used in this study tends to depress the uptake of potassium and increases the uptake of sodium.

"While different levels of available soil phosphorus are reflected in the phosphorus content of plant tissue, the data throws much doubt on the importance of an absolute critical level of phosphorus in alfalfa tissue."

Talking on the "Relationship Between Yield and Sucrose Content of Sugar Beets" were Bion Tolman and Ronald Johnson, Utah Idaho Sugar Co., Salt Lake City. They said that low yields and high sucrose were associated with adequate early fertilization, adequate and timely irrigation, plus early planting and medium to late harvest date.

H. J. Mack, L. A. Alban and T. L. Jackson, Oregon State College, discussed boron applications on vegetable crops in the Willamette Valley of Oregon. They noted that "boron applications had no marked influence on yield of table beets although boron on content of leaves increased, and decreased as boron rates were increased."

A survey of Utah orchards showed iron, zinc and manganese to be the elements deficient in Utah soils, said R. L. Smith, Utah State University. Mr. Smith felt that because manganese and zinc deficiency can be controlled effectively and economically, it was surprising to note the increase in these problems.

Dwight D. Smith of the ARS, Beltsville, discussed recent developments in rainfall-erosion research, and Louis A. Jensen, Utah State University, examined the state's corn production potential.

"There is evidence to indicate that our corn acreage could be increased substantially by making growers aware of the higher yields that can be obtained through liberal use of fertilizer together with application of other recommended production practices," Mr. Jensen said.

C. E. Domingo and J. S. Robins of the ARS reported on nitrogen uptake and yield of irrigated spring wheat as related to nitrogen and moisture variables. They gave the results of two moisture - nitrogen fertilization experiments on irrigated spring wheat conducted in Washington during 1955 and 1957.

One conclusion the two drew was that, from a practical standpoint, maximum economic nitrogen rate for spring wheat production is in the order of 100 to 120 lb. available N per acre.

"Where appreciable residual soil nitrogen exists from either leguminous or commercial sources, nitrogen additions can be correspondingly reduced," they said.

Fred E. Koehler, Washington State University, talked on "Nitrogen Uptake and Moisture Use by Wheat."

"The use of nitrogen fertilizer greatly increased early growth of the wheat," he said. "The higher the rate of fertilizer application the greater this early stimulation was. Where 160 lb. N/A was added, maximum dry matter production was reached by June 25. This point was reached later with lower rates of fertilizer application.

"Early in the season, the percentage of N in the plant increased with increasing rates of fertilizer application. By May 26 the concentration of nitrogen in the plants was about the same for the 0, 20 and 40 lb. rates of application. However, the percentage of N in the heads at the last date of sampling (July 23) was again related directly to rate of fertilizer application. At every sampling the highest concentration of N was found in the plants from plots receiving 160 lb. N/A and the second highest was from those receiving 80 lb. N/A. Total nitrogen uptake was increased with increasing rates of nitrogen uptake at all samplings.

"Soil moisture use followed the growth patterns. The fertilized wheat used slightly more soil moisture than did the unfertilized wheat. The increase in yield was proportionally greater than was the increase in soil moisture use. Hence the fertilized wheat made more efficient use of soil moisture."

Other principals speaking at the three-day meeting were Cecil H. Wadleigh, director, soil and water conservation research division, ARS, Beltsville, who discussed "Soil-root Interface"; Walter H. Gardner, Washington State University, who showed a film on "Water Movement in Soil as Shown by Time-Lapse Motion Pictures"; Frank G. Viets, Jr., who spoke on "The Significance of Recent Nitrogen Research to Fertilizer Practice," and Sterling R. Olsen, ARS, Fort Collins, Colo., who spoke on "Application of Basic Research Findings to Phosphate Fertilizer Practices."

WRONG BOTTLES—Dr. Joseph H. Davis, Dade County (Florida) medical examiner, displays bottles and jugs in which pesticides have been put with disastrous results. This display and warnings from Dr. Davis were part of the program at the recent meeting of the Florida Pest Control Assn. at Ft. Lauderdale. Dr. Davis cautioned users of toxic materials to be sure of adequate labels at all times, stating that materials can easily become mislaid and mistaken for foods or beverages. About 135 persons attended the sessions.

Contract Awarded For Corn Insect Laboratory Construction

TIFTON, GA.—A Bainbridge, Ga., contracting firm has been awarded a $404,250 contract to construct a corn insect research laboratory at the Georgia Coastal Plain Experiment Station in Tifton.

The contractor, BFM, Inc., is expected to begin work on the project in July, with completion date to be 360 days after start of the work. The building will be placed on Davis Road facing Abraham Baldwin Agricultural College. About five acres of land on which to place the building has previously been approved for sale to the federal government. The land was formerly a part of the experiment station holdings.

The laboratory, which is a regional federal project, will specialize in the corn insect problem which has cost farmers millions of dollars in crop damage both in the field and in the crib. Some regional research work has already been done by federal employees at the experiment station, and their offices will be moved into the new building when it is completed.

About $30,000 was appropriated this year to start assembling a staff for the laboratory. Staff members will be placed through the U.S. Department of Agriculture's experiment station at Beltsville, Md., and through Washington.

New Liquid Fertilizer Plant Construction Planned

DANBURY, IOWA—Establishment of a new liquid fertilizer plant and feed mill at Mapleton, with a warehouse at Danbury, is being planned by the Farmers Co-operative Oil Assn. of Danbury and Mapleton.

Minnesota to Start Soil Sample Campaign

ST. PAUL, MINN.—The 1960 Minnesota Soil Sample Roundup promotion campaign will begin Aug. 1 and continue until freeze-up this fall, said Dr. R. D. Munson, secretary, Minnesota Fertilizer Industry Assn.

According to Dr. Munson the campaign will include the following:

Radio tapes prepared by University of Minnesota personnel will be used by local stations.

TV shorts will be used around the state. News releases featuring soil sampling, testing and the benefits thereof will be supplied to local newspapers during the entire campaign.

All local editors will receive ad mats on soil testing. Dealers will receive copies of this material, which they can sponsor individually.

County agents and vo-ag teachers will give special emphasis to soil sampling.

A poster, "This was my vacation ticket," is prepared and will be distributed to county agents, ag teachers and fertilizer dealers around the state.

Give the Soil Sample Roundup your full support!

The campaign is designed to harness all of our resources—industry, university specialists and county agents—in hard-hitting promotion of soil fertility through soil testing, said Dr. Munson. It is sponsored by the Minnesota Fertilizer Industry Assn., University of Minnesota, American Potash Institute and National Plant Food Institute.

DUSTER KILLED

MANORVILLE, N.Y.—Frank Wysocki, 33, of Springfield, Mass., died when his crop dusting plane crashed in a cranberry bog near here.

FERTILIZATION INCREASES INSECT PEST CONTROL?

AUSTIN, COLO.—It may be possible to increase effectiveness of insecticides by as much as 100 percent through the proper use of fertilizers, a Colorado State University Agricultural Experiment Station entomologist says.

Dr. John A. Quist, assistant entomologist with the Western Slope Branch Experiment Station at Austin, says his first-year studies showed that apples from fertilized trees had only half as many worms as those from unfertilized trees in four out of six treatments.

Dr. Quist applied six different insecticides to both fertilized and unfertilized trees in his experiment. The increased response to insecticides was noted on fertilized trees with four of the materials.

Fertilization boosts plant vigor which in turn increases the natural resistance of the trees to parasites, Dr. Quist explains.

"The nutritional vigor of long-lived plants has been recognized for years as an important influence in insect populations," he points out. "The studies at Austin are to determine how much proper fertilization can help to alleviate pest problems along with the use of chemical control."

Although other agricultural researchers have reported marked responses of insect populations to various chemical fertilizers, Dr. Quist's study is believed to be the only concentrated research program to measure increased insecticide response with fertilization.

Dr. Quist is applying nitrogen, phosphate and potassium fertilizers along with chelated metal fertilizers of iron, zinc, and manganese to obtain proper nutritional balance. He is using leaf analyses of samples taken throughout the summer to determine amounts and frequency of application of fertilizers.

SPECIAL MERCHANDISING SECTION

BETTER SELLING

MARKETING NEWS AND FEATURES

Square Dance to Highlight Georgia County's Second Soil Test Campaign

By ROBERT H. BROWN
Special Croplife Writer

This year, in November or sometime in December, when the crops are all in, a school auditorium in Hawkinsville, Ga., will be opened and sounds of a square dance caller will echo through the town.

It will be part of a second campaign in the area to get soil tests made to see just what the farmers of the area need or don't need in the way of fertilizers.

Farmers from miles around will flock to town, with their girl friends or wives, and with them they will bring a copy of their soil analysis. If they don't have the soil analysis, then they're not going to be admitted to the community square dance. That's the rule, no soil test, no entrance to the dance.

Last fall the community campaign to get soil tested was a big success and it's going to be repeated again this fall, according to fertilizer dealers, county agents, the newspaper publisher, the radio station operator and others.

These men—and women, too—all joined in the drive last year. Marion E. Allgood, county agent, estimates that something like 85% of the acreage in Pulaski County has had a soil test made. Hastily, he points out this figure includes the acreage under the protective wing of the government and the soil bank.

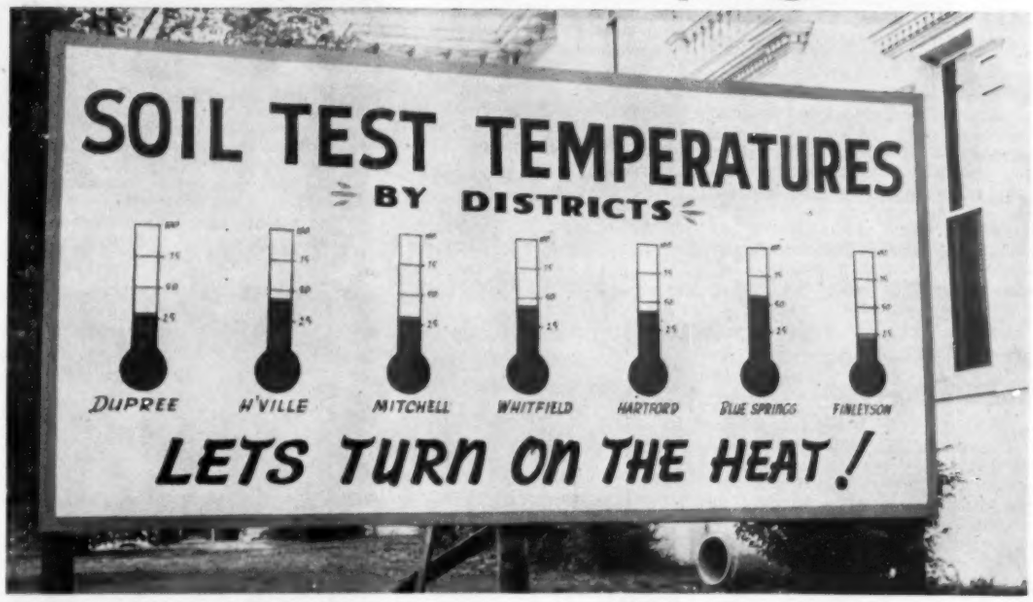
But even at that, 35% of the land not under the wing of the government was given a test last fall.

The drive to get those tests made last fall took on the aspects of a Community Chest drive. A huge sign was erected on the lawn of the courthouse, right in the center of town, to show the progress being made. This sign, the likes of which has been seen in many a town on a drive for charity or other funds, showed "mercury readings" for each of the seven districts in the county.

Every Friday the sign was changed to show the standings in each com-

(Turn to CAMPAIGN, page 11)

IN DRUG STORES, department stores, garages and filling stations, notices were hung on the wall calling attention to the special soil-testing week. This picture was made in the office of fertilizer dealer Brigham White.



IN THE HEART of downtown Hawkinsville, Ga., on the courthouse lawn, this sign kept the people of Pulaski County, Georgia, informed about the progress of the drive to have soil tested. The campaign had the ear-marks of a Community Chest fund raising drive, but it was not for money. Just a soil test.

Michigan Company's Youth Program Results in State's Top Corn Yield

By HARRY RANSDELL

The old adage, "Don't send a boy to do a man's work" has been knocked for a country mile in Michigan. For the past three years, high school boys have been achieving yields that that should put many older farmers to shame.

Last year, for example, young Richard Stasa of Chesaning grew 206 bu. of shelled corn per acre, believed to be the highest corn yield ever scored in Michigan. In another field he produced 50½ bu. per acre of soybeans.

Mike Sopha of Yale harvested 118 bu. per acre of oats, and topped this off with a 70 bu. per acre yield of wheat. Another lad, Bernard Hulfilz of Merrill, grew 47.18 bu. per acre of navy beans, a specialty crop in the "thumb" area of Michigan.

How good are these yields? Well, the Michigan 1959 average acre yields for these crops were: corn, 60 bu.; navy beans, 19.16 bu.; soybeans, 24 bu.; oats, 41 bu., and wheat, 31 bu.

The bumper yields are the result of a combined philanthropy and smart business gesture on the part of the Michigan Bean Co. and Charles Wolohan Elevators of Saginaw.

The "Big Acre" program was kicked off three years ago with the enrollment of Future Farmers of America members and high school agricultural students in the cities and towns where the firm has elevators.

C. L. "Lew" Taylor, field service manager for Michigan Bean, ramrods the program from the company end. The aim of the program, he declares, "is to develop good citizens and agricultural leaders through incentives and encouragement, and to promote use of the best combination of scientific, proven farm practices in crop management programs." A further aim from the company standpoint is to cement a closer relationship between the firm and its customers.

The program, in spite of the labor and expense involved, is paying off richly, not only in achieving additional esteem for the company, but in building increased business for the present and assurance of continued growth in the future.

"We expect to be doing business for a long time to come," Mr. Taylor says. "We figured that one of the best ways we could assure our future welfare was to take a deeper interest in the welfare of our future farmers."

Cash awards are made to the first, second, and third high men in each chapter in each crop category. Top winners in each crop, chosen by inter-chapter selection, receive additional $25 prizes. Cash prizes amounting to more than $1,100, in addition to numerous ribbons and trophies, are awarded at an annual banquet held each December at Saginaw.

A total of 302 boys from 17 schools entered a total of 499 projects in 1959 "Big Acre" competition. Of these, 163 completed 303 projects.

Average bushel per acre yields of the top 10 contestants in each crop were: navy beans, 41.17; wheat, 64.80; oats, 103.48; soybeans, 31.21, and corn, 140.16. Bushel per acre averages for all contestants were: navy beans, 33.70; corn, 100.96; soy-

(Turn to BIG ACRE, page 13)

C. L. "LEW" Taylor, field service manager for Michigan Bean Co., Saginaw, Mich., holds the trophy awarded to the best FFA chapter in the company's "Big Acre" program. Before him are some of the other ribbons. Cash prizes, awards, and ribbons are presented to "Big Acre" winners at an annual banquet held each December at Saginaw.

WHAT'S NEW

IN PRODUCTS · SERVICES · LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 6076—Registered Insecticide

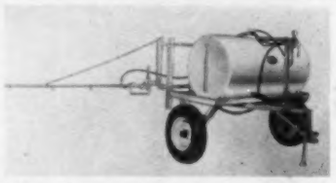
Systox, a systemic insecticide manufactured by Chemagro Corp., is now registered by the U.S. Department of Agriculture for control of aphids and mites on tomatoes and peaches, and for aphids on peas and celery. The product was introduced in 1951 and has been used to control aphids, mites and leafhoppers on vegetables, fruits, nuts, forage crops and ornamentals. It is a spray concentrate which forms an emulsion when diluted with water and is suitable for use in all power-operated ground sprayers and aircraft sprayers. For more information, check No. 6076 on the coupon and mail.

No. 6077—Fungicide Manufacturer

Union Carbide International Co. has licensed Miller Chemical & Fertilizer Corp. to manufacture and distribute "658" Fungicide, a copper-zinc-chromate complex, under all existing foreign patents. According to company literature, the fungicide has proven effective against many diseases including early and late blight on potatoes and tomatoes, downy mildew on cucumbers and melons and several diseases on turf. Miller's marketing plans include establishing distribution in many foreign countries where the growing of crops requiring fungicidal treatment is practiced. For more information, check No. 6077 on the coupon and mail.

No. 6074—Boom Sprayer, Trailer

Walsh Manufacturing Co. announces a boom sprayer complete with trailer. The sprayer carries three sections with 21 ft. or 27 ft. lengths for six or eight row coverage. The company's "Super-Flex" hinge permits the operator to lift the sections up or swing behind the trailer for transporting. The double V-shaped



hinge also absorbs the jolts instead of the booms, the company says. Another feature is a suction hose attachment on the underside of the tank. A special shut-off valve and line suction strainer are attached between tank and pump. For more information, check No. 6074 on the coupon and mail.

No. 6075—Chinch Bug Control

Korlan 24E, a chemical for use on the control of chinch bugs in lawns, has been accepted for use in Florida, announced the Dow Chemical Co. Korlan has been previously approved for use on a variety of insects, the company says. High insecticidal activity and long-lasting residual action, coupled with a low toxicity to warm-blooded animals are features of the product, the company says. For more information, check No. 6075 on the coupon and mail.

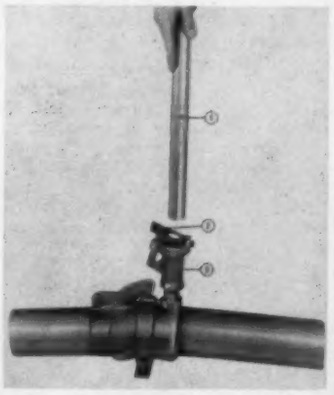
No. 6072—Tree Killer Injector

Reuel Little Tree Injection Co. announces quantity production of its tree killer injector. Used to kill hardwoods in commercial forests or for deadening worthless brush and trees for grazing land or rights-of-way, it kills by direct injection of a herbicide into the inner bark of the tree. It

permits selective killing, without chemical drift danger to livestock and crops, and can be used any time of the year. It is 5 ft. long, with a 2½ in. barrel and holds 7½ pt. herbicide. For more information, check No. 6072 on the coupon and mail.

No. 6073—Riser Quick Coupler

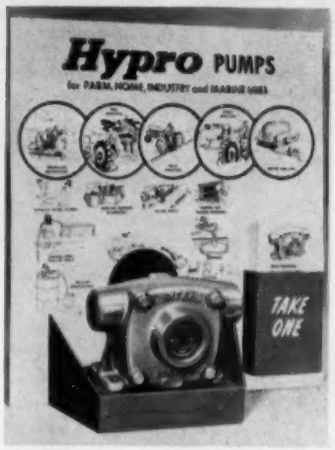
A riser quick coupler cast of corrosion resistant aluminum alloy for use with all sprinkler irrigation systems is being made available by the John Bean division of Food Machinery & Chemical Corp. The unit can be installed on all John Bean "Shur-Rane" irrigation couplers and other



brands of irrigation couplers with 1 in. riser outlets. It is designed for use on older systems already in use as well as new systems. A downward push locks the riser in place without twisting or turning. For more information, check No. 6073 on the coupon and mail.

No. 6078—Pump Display Card

A pump display card that features a pedestal for mounting Hypro Sprayer pumps or general purpose FlexRotor and FlexRoller pumps is

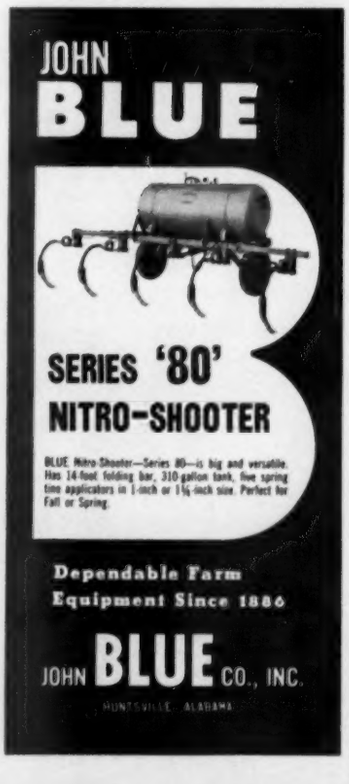


being offered to dealers by Hypro Engineering, Inc. The 14 in. by 15 in. cardboard display is printed in red, yellow and black. Line drawings are used to suggest uses for the pumps. The card displays a pump and holds a supply of literature for the pump. For details, check No. 6078 on the coupon and mail.

Cotton Scouts Employed To Help Insect Problem

VIENNA, GA.—In an effort to assist Dooly County farmers with their cotton insect control program two cotton scouts have been employed in Dooly County this summer. They are Hoke Reed, Jr., Vienna, and Jimmy Phillips, Unadilla.

This program is sponsored by Dooly Gin & Fertilizer Co., J. A. Whitehead Warehouse, Citizens Bank, Coley's Gin, and Roy Noble, all of Vienna; Bank of Byromville, Lester's Gin, Groves & Saliba Warehouse, all of Byromville; Bank of Pinehurst, Planters Warehouse, Producers Gin and E. L. Taylor, all of Pinehurst, and Buff & Godge, Exchange Bank, and Buff & Morgan Gin Co., all of Unadilla.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- ☐ No. 6074—Boom Sprayer, Trailer
- ☐ No. 6075—Chinch Bug Control
- ☐ No. 6076—Registered Insecticide
- ☐ No. 6077—Fungicide Manufacturer
- ☐ No. 6078—Pump Display Card

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COMPANY .....

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Croplife

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Reader Service Dept. Minneapolis 40, Minn.

CAMPAIGN

(Continued from page 9)

munity—just as if the people of the area were fighting to raise money for the Community Chest.

All over town, in drug stores, in department stores, seed houses, as well as fertilizer places, a small card rested in a prominent spot, reading:

"Don't guess! Soil Test—Pulaski Soil Fertility Week Nov. 15-21—Push your voting district on top by Jan. 1—see signs at court house."

"The secret of the whole drive was the publicity given during the campaign. Only one week was celebrated although the drive actually went on for more than a month. By setting aside one specific week, we were able to bring the drive to a fever heat," said Mr. Aligood.

"We had set up a very good organization. We made the publisher of the paper a member of the publicity committee along with the radio station people. They really went to town with stories about the special week. The radio station put on little 30-second station breaks every day, all day long, and they continued them for about six weeks, although the campaign was actually only a week. I guess they used these spots 400 to 500 times," Mr. Aligood said.

During the celebration last fall it was planned to have the square dance on a Saturday night with admission being the test analysis. However, unexpectedly, a football game came up and the school wanted to call off the dance. It was a big disappointment to the people. "This fall we definitely are going to have that square dance. You can count on it," Mr. Aligood said.

"People got into the swing of things. We even had people right here in town, with a little garden plot, wanting to have their soil tested just so they could go to the dance," he said.

A very active farmer was made chairman of the drive to get the tests made. It was his duty to appoint committee members for each of the seven areas.

"This chairman really worked because he is a farmer who has really been sold on soil testing and the use of fertilizer. We made a test of his soil and he found he could save $16 an acre over what he had been spending. So everywhere he went he talked about his own experience and how he had saved this $16 an acre and he got the farmers all pepped up," Mr. Aligood continued.

"We set a deadline of Friday for the soil bags to be handed in for testing. We stressed they had to be in on that day so they could be sent to the experiment station at Griffin for tests," he said.

Fertilizer dealers cooperated by providing not only the bags for the soil samples, but they also made financial donations to the campaign. Only a few hundred dollars were spent and some of this money is still in the bank, according to F. E. Dortch, a dealer, who acted as treasurer.

"Pulaski County farmers have always been fertilizer-minded. I'm told it is one of the best counties in the state in the use of fertilizers. So the farmers got on the bandwagon in the drive and put it across," Mr. Dortch said.

This type of promotion is being arranged in several counties in Georgia each year. Originally started by Dr. Ralph Wehunt, formerly with the extension service for Georgia, to emphasize the need for soil testing, something like 33 counties have had similar drives. It's part of a statewide effort to bring Georgia's deficiency in soil to an end and to stress the importance of better plant feeding.

The Hawkinsville campaign is held in the fall of the year, after the farmers' crops are all in and they have time on their hands to participate. Other counties have had drives in January and February.

Brigham White, one of the leading fertilizer dealers in the county, said there isn't any doubt but what the drive has helped the farmer as well as the dealer.

"It awakened the farmer to what he was doing that was wrong. Most of them found they needed more 5-10-15. Generally speaking, they found they were deficient in nitrogen. But really, the biggest change was in the increased sale of lime. After the tests were made we have really been selling the lime," Mr. White said.

Mr. Aligood said he had talked to one liquid dealer who remarked that he had doubled the sale of liquid nitrogen over the previous year's sales, due entirely to the soil testing program.

Actually, the campaign is to be carried on for the next five years. Each year will be set aside for one specific crop, Mr. Aligood said. This fall he plans a drive for testing for corn. Next year it may be corn or tobacco, the latter being a big money crop in Hawkinsville.

"The drives must be dramat'zed and the people must be given an incentive. Don't try to do it all in one week. Set aside one week for the peak of the publicity but continue the campaign for at least one month," he advised.

Be doubly certain, he says, a chairman is appointed who will work with the district chairmen and really get them enthused. Be sure publicity is available by calling in the editor of the local paper and the owner of the radio station.

Both Mr. Dortch and Mr. White stressed that the results will probably be noticeable for years to come.

"Over the long range, I think it is going to pay the merchants and the farmers, too. They see now what they have been doing that has been a waste of money and now they can get straight," Mr. Dortch said.

"The fact that it has been shown most farmers were deficient on nitrogen means they'll be getting better money crops," Mr. White said.

JACK RABBIT TROUBLE

BIG SPRING, TEXAS—Once again farmers in West Texas are being plagued by jack rabbits. Coupled with the dry weather and short crops, the expense of poisoning rabbits has been added to the farmer's problem. County agricultural agents in several counties have reported heavy sales of chemicals to combat the long-eared bunnies.

The "LINE RIDER"

Specializes in knocking off brush and weeds found along utility lines, railways and highways. Destroys mixed brush with 2-Ethyl Hexyl Ester formulations of 2,4-D and 2,4,5-T, and amine formulations in areas adjacent to sensitive crops.

The "FENCE RIDER"

Picks on isolated farm fence rows. Where volatility is no problem, uses the Butyl Ester formulations of 2,4-D and 2,4,5-T for economical kills of mixed brush. Attacks solid, resistant stands with higher acid formulations of 2,4,5-T. Low volatile formulations also available.

The "CROP RIDER"

He's the weed specialist. Favorite hunting grounds are grain fields and pastures. Seeks out weeds in oats, flax and rice with amine formulations. Boosts yields of corn and sorghums with Isopropyl Ester. Uses Butyl Ester for hard-to-kill perennials.

LINE RIDER, FENCE RIDER and CROP RIDER herbicides are available now in quantity for formulators and professional applicators. Write for complete technical data. Diamond Alkali Company, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals

Knowledge of Local Soil Needs Helps Louisiana Dealer Grow

By RUEL McDANIEL
Croplife Special Writer

Find out what your local soils need, prepare to supply the deficiency and then go out and tell farm and ranch owners about the service. That has been the policy of McCall's Farm Supply & Garden Center, Lake Charles, La., and the policy has built an excellent volume of fertilizer sales to area ranch owners and farmers with pasture lands.

"We knew that local soils were deficient in lime," explains H. D. Taylor, Jr., company manager, "and we located a type of soil-builder that would supply this deficiency. Then we started calling on farmers and ranchers and telling them what their pasture lands needed."

A few bought on the say-so of the company. Others who did not, watched the experience of neighbors who did listen, and the new idea of fertilizing pastures caught on. Today the company orders lime and raw rock phosphate in carload lots and keeps two truck spreaders busy during the spring and early summer handling its pasture fertilizer business.

The average 50-acre pasture needs 25 tons of raw rock phosphate, the company has learned by soil-testing and observation, and it sells on this basis.

In order to give the customer a better price while making a satisfactory gross, the company sells in advance of ordering, and then orders only in carload lots—of 50 to 70 tons.

THESE TWO special tank trucks serve customers of McCall's Farm Supply & Garden Center who buy minerals and fertilizers for pasture lands and rice fields. Delivery is directly from railroad car to customer.

When a salesman sells a farmer an order of pasture fertilizer, he sells him at the same time on the advisability of having the company do the spreading. For this service the company charges a base of $4 a ton.

This figure provides for delivery up to 10 miles of the company plant. Beyond 10 miles, the charge for the spreader service is the base of $4, plus 10c per mile.

"We don't encourage customers to attempt their own spreading," Mr. Taylor explains. "We know when we do the job it is done right and the customer will be certain of getting the most for his money. Besides, the differential between the price we charge for the materials on the basis of our ordering in bulk in carload lots and the bag price is more than the cost of spreading. Thus the customer actually saves money, gets more for his dollar and we make as much profit as if we sold in smaller, bag orders and the customer spread his own."

In addition to pasture business, the company also sells a lot of fertilizer to rice farmers, and both prospect sources are worked on a farm-to-farm basis during the early spring season by an outside salesman. The two lines, though entirely different, may be worked successfully together, not only because some rice farmers also have pasture land and even farmers who do not grow rice are in many instances in the same general area as rice farmers, and may be called on during the same trip into the specific territory.

"We encourage farmers to place orders well ahead of the time they will actually need the fertilizer," Mr. Taylor explains. "That not only enables us to order in larger quantities but makes it possible to plan and schedule our deliveries and services."

A MAJOR display of plant foods and insecticides on the sales floor of McCall's Farm Supply & Garden Center, Lake Charles, La., appeals to small farmers and gardeners. This department adds to the total fertilizer volume and cashes in on store traffic.

Although farm and ranch business contributes most of the company's fertilizer volume, it does not overlook the needs of the gardener and small truck farmer and stocks plant foods and fertilizers needed locally for these customers in quantities sufficient to meet customer needs as they arise. Store displays of these lines help to create demand.

Safe Chemical Use Object of Contest

CORVALLIS, ORE. — Cash prizes will be awarded to Oregon 4-H youths who do a skillful job of demonstrating safe use and handling of agricultural chemicals according to rules of a new contest.

Cal Monroe, state 4-H extension agent at Oregon State College, reports that the Western Agricultural Chemicals Assn. is offering the first contest in this area to Oregon's 31,000 4-H club members. Top demonstrators at county fairs will receive $5 each and a chance to compete for more cash at the state fair.

Purpose of the contest is to promote the safe use of chemical pesticides, which include all chemical sprays, dusts and other poisons used to kill insects, weeds, rodents and other pests. It also includes pesticides used to control the growth of crop plants.

Suggested demonstration topics include safe handling and storage of poisonous chemicals, rodent control, use of right equipment when handling poisonous chemicals, and reading labels.

The WACA will help furnish 4-H members with demonstration materials, and encourage cooperation from local stores.

Salesmen's Schools Announced by VPI

BLACKSBURG, VA.—Agronomists of the Virginia Polytechnic Institute agricultural extension service have announced plans for schools for fertilizer salesmen.

A spokesman said the schools will be held Oct. 18 and 19 in Danville for salesmen operating in the area from Rocky Mount to Emporia, and Lynchburg to the North Carolina line, and Oct. 25 and 26 in Norfolk for salesmen operating in Norfolk, Princess Anne, Accomac and Northampton.

Similar schools will be held for salesmen throughout Virginia within the next three years, it was stated.

File Articles

DENVER, COLO.—M and N Distributors, Inc., here, has filed articles of incorporation listing $49,000 capitalization to engage in the distribution of and to sell at retail or wholesale chemicals and chemical products principally for use as commercial plant fertilizers.

Incorporators and directors include L. E. Whitlock, Robert C. Montrose and D. Charlene Newell.

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FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Farmers today are getting 76% more nutrients per ton of mixed fertilizer than they got 30 years ago, reports the Midwest division of the National Plant Food Institute.

"Back in 1929, the average of the three primary nutrients—nitrogen, phosphate and potash — in mixed fertilizer, was 17.6 units," says NPFI in a statement based on U.S. Department of Agriculture compilations. "In 1959, the average was 31 units."

This trend toward higher analysis fertilizer explains why prices of plant food have remained relatively low over the years, says NPFI. Meanwhile prices of all items used by farmers in crop production have more than doubled since the 1930-39 period.

"The extra crop growing power in every ton of fertilizer today helps farmers combat the cost-price squeeze by enabling them to reduce their costs of production per acre," says NPFI. "And it is axiomatic that as costs go down, net profits go up."

★

To fertilize or not to fertilize forest trees and, if fertilization helps the tree growth, how much and what kind of fertilizer should be applied, are questions under study in many sections of the South.

Dr. L. C. Walker, associate professor of forestry, school of forestry, University of Georgia, is one of the scientists making the experiments on the trees.

"Not within five years will we know the answers," Dr. Walker said. The experiments which have been going on about a year at the University of Georgia are directed now to locating the feeding roots of pines, he said.

By using radioactive isotopes (he uses phosphorus-32), Dr. Walker is finding out how much phosphorus the tree picks up from the soil. "You can find some phosphorus in the needles within two days, but our checks are run on a two-week basis," he said.

"Fertilizer is applied at different depths and at different distances From the surface to a depth of 5 ft., the fertilizer is applied in the experiments, and it may be placed all the way from immediately at the trunk to a distance of 25 ft. as the farthest distance for fertilizing, so far."

In other experiments, Dr. Walker said, it has been determined that pine seedlings should not be fertilized the first year and probably not the second year. This is because of the competition of weeds and grasses for the moisture the young tree needs.

Another study underway on the coast indicates that trees growing in low, swampy areas may do well with fertilization the first year, since there is more moisture available and less weed and grass competition.

Studies are being made on fertilization of hardwoods as well as pines, Dr. Walker said. And the indications are "the potentials are probably greater" for the hardwood fertilization. This is probably due to the facts that the hardwoods grow mostly in bottom land where there is adequate moisture and hardwoods demand more nutrients than do pines.

"The oak leaf contains phosphorus, potash and calcium," Dr. Walker said. "The pine needle shows scarcely a trace of anything except cellulose."

Other studies under way at the Georgia School of Forestry include effects of fertilizer on wood quality, genetics, wood quality inheritance, management, naval stores economics and wild life.

★

Feeding crops a balanced diet of all needed plant nutrients is the key to producing low cost, high profit yields, reports Delno Knudsen, University of Nebraska extension soils specialist.

Mr. Knudsen says failure to supply one nutrient that is deficient in the soil can cut yields and income per acre. He cites nitrogen as an example.

"Lack of nitrogen is a bottleneck often responsible for poor yields of corn," he points out. "Side-dressing of corn with nitrogen fertilizer, or preplant applications has been a highly profitable practice on both irrigated and dryland corn."

Mr. Knudsen emphasizes that in addition to nitrogen, corn land should be well supplied with phosphate and potash fertilizer where soil tests indicate the need.

Turning to the fertilizer needs of other crops, Mr. Knudsen has this to say:

"On small grain where there is little or no danger of lodging, 30 to 40 lb. of nitrogen can be profitably used. Superphosphate or mixed fertilizers containing phosphate should be disced into the soil or applied with an attachment on the drill where the soil test shows the need. When the soil is well supplied with minerals, there is less danger of smothering out alfalfa and clover seedlings."

Mr. Knudsen points out that it takes two to four weeks to get results back from soil tests, so samples should be taken and sent in as soon as field conditions permit sampling.

BIG ACRE

(Continued from page 9)

beans, 32.21; oats, 74.47, and wheat, 53.30 — all substantially above the 1959 state averages.

Corn proved the most profitable crop with net per acre returns after expenses of $119.67 for the top winner. Navy beans were next with a net profit of $102.41 per acre for the best yield. Oats, despite the heavy winning yield, gave the lowest cash return, paying only $23.99 per acre. Soybeans paid off at the rate of $31 per acre for the winning yield.

With the exception of oats, yields in each crop were higher than those for the previous year. The 1958 top oats yield was 134 bu. per acre.

Last year was the third year of operation for the "Big Acre" Club. To participate, each contestant is obliged to keep an accurate record of his operations and submit it together with a story detailing his experiences. Winners are chosen on a point basis with top production earning 30 points. Cultural practices, fertilizer program, best peck sample and record and story each have possible point values of 20.

Mr. Taylor believes the examples set by the boys are having a beneficial effect in bettering crop production in general throughout the state. Fertilizer applications, he says, probably have the greatest single influence on yields. To achieve his winning corn yield, Richard Stasa plowed down 500 lb. per acre of 12-12-12, plus a crop of rye as green manure. He banded 250 lb. per acre of 6-24-12 with the seed. The corn was side-dressed with 150 lb. of actual nitrogen supplied by non-pressure urea-ammonium nitrate liquid nitrogen. The corn was planted May 16 in 28 in. rows with a population of 26,000 plants an acre.

For his soybeans, young Mr. Stasa plowed down 250 lb. per acre of 5-20-20 and banded 200 lb. per acre of the same analysis with the seed. This was followed with a side dress application of 40 lb. actual nitrogen per acre, using the same non-pressure nitrogen solution used on the corn.

For fertilizing his navy beans, Bernard Hulfilz banded 340 lb. per acre of 12-12-12 with the seed, and side dressed with 80 lb. of actual nitrogen. He also used non-pressure nitrogen solution.

Mike Sopha plowed down clover and oat straw together with 300 lb. per acre of 4-16-16, plus 66⅔ lb. per acre of actual nitrogen for his wheat. For his oats, he made heavy applications of barnyard manure, and applied 400 lb. per acre of 4-16-16 at planting time.

A. L. RIEDEL, general manager of the Wickes Corp., parent organization of Michigan Bean Co., Saginaw, Mich. (extreme left), and C. L. Taylor, manager of Michigan Bean (extreme right), pose with the three 1959 top "Big Acre" winners, from left to right, Bernard Hulfilz, Richard Stasa, and Mike Sopha.

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for further information about the R710, plus a full line of other Simonsen bulk fertilizer bodies and the new Simonsen Feedilizer (a dual-purpose bulk feed and bulk fertilizer body).

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Survey Shows Higher Non-Farm Fertilizer Use in South Atlantic

Non-farm householders in the South Atlantic states consumed about 218,100 tons of commercial fertilizer in the year ended June 30, 1959, according to a survey by Arnon L. Mehring, private fertilizer consultant. This represents a mean fertilizer consumption per occupied non-farm dwelling of 99.5 lb. (table 1), a rate more than twice those recorded in New England and the Middle Atlantic States, previously reported.

The bulk of this fertilizer consisted of regular grades and materials. Peat and liming materials are not included.

These estimates are based on a sample survey of 2,146 non-farm homes scattered throughout the region. This study, as well as those for New England and the Middle Atlantic states deals exclusively with fertilizer use by non-farm homes, and does not cover other non-farm outlets such as parks, golf courses, roadways and industrial installations.

EDITOR'S NOTE: This is the third in a series of reports on regional studies of fertilizer use by non-farm homes being conducted by the author, Arnon L. Mehring. His first report covered the New England states (Croplife, Jan. 11, 1960, page 1) and the second the Middle Atlantic states (Croplife, April 18, page 1). This article is reprinted from the "Plant Food Review," a publication of the National Plant Food Institute. Mr. Mehring formerly was senior chemist and later fertilizer staff specialist with the U.S. Department of Agriculture in charge of statistics.

All classes of communities in each state, all types of occupations and all races are represented in the sample. The data were collected almost entirely by personal interview.

Consumption by states is summarized in Table 1. These data have been corrected for imperfect sampling in such a way that the weight given for each community size-class, occupational group, and race corresponds to the ratios in which they occur in each state.

Of all the people interviewed, 55% had used at least some fertilizer in the period covered. Many of those who said they personally had used no fertilizer, however, lived in apartments, housing projects or rooming houses where fertilizer had been used, but they knew none of the details. It was impractical to follow up such cases in the present study.

A previous study for the year 1956 resulted in an estimated consumption in this region of 332,500 tons. It now appears that this estimate was too high, probably because the purely random sample used previously did not include a sufficiently high proportion of negroes. The earlier figure also included an estimate for apartment dwellers, but this was less than 10% of the total.

The total retail value of the fertilizer used by non-farm families during 1958-59 was approximately $16,700,000. Table 2 gives a breakdown of this figure by types of materials.

Fertilizer use for different purposes is summarized in Table 3.

Comparing the data in Table 3 with similar data for the other two regions studied shows some interesting trends. The percentage used on lawns, for instance, is almost identical in the three regions. The proportion used on vegetables, however, generally decreases from 26% in New England to 5% in Florida. The mean for the South Atlantic Region is 13.2%. North Carolina seems to be an exception to this trend with 28% of the fertilizer used on vegetables.

The proportion of the fertilizer used on shrubbery shows a trend opposite to that for vegetables, as illustrated by the following summary:

State or region	Fertilizer used on shrubbery (% of total)
New England	2.7
Middle Atlantic	4.8
Virginia	6.9
North Carolina	7.7
South Carolina	16.0
Georgia	17.6
Florida	11.1

This higher rate of shrubbery fertilization in the South is believed due in part to the more extensive culture of varieties of shrubs such as azaleas and camellias that require heavier fertilization, especially along the Coastal Plain from Norfolk to Orlando.

In the case of tree fertilization, non-farm households in Virginia and the Carolinas used about 2% of their total fertilizer for this purpose—about the same as used in New England and the Middle Atlantic States. Use in Georgia climbed slightly to about 3%, with much of the fertilizer going on pecans, peaches and figs. In Florida, however, about one-sixth of the total was used on trees, primarily because so many homes have one or more citrus, palm, avocado, mango or other tropical species on their grounds that must be fertilized several times a year.

Consumption of most of the mixed fertilizer grades consisted entirely of regular farm goods. However, a few, such as 4-8-4, 5-9-5, 6-8-8, 6-10-4, and 20-10-15 were sold largely as specialty goods recommended specifically for lawns or gardens. Even in the case of these grades, however, specific crops were not always mentioned on the labels.

A few grades, including 4-12-12, 5-10-5 and 8-8-8, were reported in every state. On the other hand, most of those with guaranteed analyses of less than 20% total primary nutrients were encountered only in Florida. Examples are 4-5-7, 4-7-5, 4-8-4, 4-6-8, 6 6-6, and 8-4-4. Such grades usually are guaranteed to contain part or all of the nitrogen in an "organic" form and definite quantities of secondary or trace elements. The 4-8-6 and 4-8-8 were reported in both Georgia and Florida, the 10-10-10 principally in Virginia and North Carolina, and the 4-10-6 only in South Carolina.

More consumers reported using 6-10-4 than any other grade of mixed fertilizer. However, quantities used of 6-6-6, 5-10-5, 4-7-5, 4-8-4, and 8-8-8 all exceed that of 6-10-4. These six grades alone account for slightly more than half the total quantity reported for the region.

More than 50 different brands of small package fertilizers were reported in the region, but only a fraction of these were found in all of the five states. Practically all of the concentrated mixtures, or so-called "instant" fertilizers, comprised the four grades of 13-26-13, 15-30-15, 20-20-20, and 23-21-17.

Most of the tonnage of small package specialties in this region consists of goods recommended for use on acid-loving plants. Most of it was bought in 5-, 10-, or 25-lb. packages. However, some brands of goods for azaleas and camellias are put up in 100-lb. bags. While only a few of these were reported, a great many persons bought more than one each of the smaller packages during the year so that the average use per home for the 135 who reported buying this type of fertilizer was 43 lb.

Fertilizer prepared especially for roses was reported used by 34 of those interviewed. Of these, all but five used 25 lb. or less.

Lawn services are of two types. One involves custom application once or twice a year of a complete liquid fertilizer. Ten families reported making use of this service. The other involves complete year-round lawn care and was reported by six households. In only two of these six cases was mixed fertilizer used. In the other four, either castor pomace or activated sewage sludge was applied.

Table 4 summarizes the frequency distribution of amounts of fertilizer used per home by occupational groups. It also shows the percentage of non-users, the mean use per household, and the maximum use recorded in each group.

The non-user percentage varies

TABLE 1

Estimated Non-Farm Home Fertilizer Consumption, by States, Year Ended June 30, 1959

State	Estimated* non-farm dwellings Jan. 1, 1959 (thousands)	Mean fertilizer consumption† (lb. per home)	Estimated‡ total consumption and its standard error (tons)
Virginia	857	75.9	32,500 ± 3,000
North Carolina	834	76.6	32,000 ± 3,500
South Carolina	457	77.3	17,600 ± 2,000
Georgia	801	72.5	29,000 ± 2,500
Florida	1,434	149.2	107,000 ± 6,000
South Atlantic region	4,383	99.5	218,100 ± 4,200

*Prepared from data in the 1950 Census of Housing and estimated changes since.

†Adjusted for imperfections in sampling.

‡Products of preceding two columns rounded off. These totals do not include additional quantities of fertilizers used for other non-farm purposes, such as golf courses, parks, cemeteries.

TABLE 2

Estimated Retail Value of Fertilizer Used by Non-Farm Homes in the South Atlantic States*

Kind	Retail value
Mixed fertilizers	$11,200,000
Small packages	1,504,000
Pesticide mixtures	300,000
Lawn service	1,400,000
Materials	2,300,000
Total	$16,740,000

*Year ended June 30, 1959.

TABLE 3

Estimated South Atlantic Non-Farm Home Fertilizer Consumption by Type of Usage, Year Ended June 30, 1959

Type of usage*	Per cent of total in survey	Estimated tonnage
Lawns	56.85	124,000
Vegetables	13.20	28,800
Flowers	9.46	20,600
Shrubbery	10.97	23,900
Trees	9.30	20,300
Potted plants	.14	300
Composting	.08	200
Total	100.00	218,100

*Small fruits are included with vegetables. "Shrubbery" consists of foundation and border plantings, hedges and small evergreens. "Trees" include fruit, shade and large evergreen trees standing alone.

TABLE 4

Frequency Distribution of Amounts of Fertilizer Used Per Home, by Occupational Groups

Class interval*	Household workers	Labor	Public service	Operatives	All others†	Clerical	Sales	Skilled crafts	Professional	Management	Retired	Total for the region
					(Number in sample)							
	107	168	203	350	67	247	173	296	193	265	77	2,146
(Pounds per Home)					(Per cent of total)							
0	72.9	78.0	54.7	56.3	70.1	46.2	36.4	43.2	20.2	20.4	16.9	45.4
0.1-0.9	4.7	.6	1.0	2.3	1.5	3.2	2.3	1.7	.5	1.9	..	1.9
1-1.9	0.9	1.2	1.0	.6	1.5	1.6	2.3	1.0	3.1	1.1	1.3	1.4
2-3.9	..	.6	.5	.3	..	.8	.6	.7	.5	.4	..	.5
4-7.9	6.5	1.8	3.4	5.1	..	2.8	4.0	2.7	4.1	2.3	..	3.3
8-15.9	4.7	4.2	3.9	4.9	3.0	6.5	5.2	4.7	4.7	4.1	3.9	4.7
16-31.9	6.5	3.0	5.9	4.3	1.5	4.5	6.9	3.4	3.6	3.8	2.6	4.3
32-63.9	2.8	1.8	4.4	2.8	4.5	4.5	5.8	6.4	4.7	5.7	3.8	4.4
64-127.9	..	5.2	15.3	8.3	4.6	12.1	9.2	10.5	15.5	14.7	11.7	10.6
128-255.9	.9	2.4	5.4	8.6	5.9	11.3	12.7	18.1	21.2	15.5	18.4	10.2
256-511.9	..	.6	3.9	4.3	4.5	4.9	9.3	9.5	15.5	19.2	35.1	8.9
512-1023.9	..	.6	.5	2.3	2.9	1.6	5.2	4.7	5.7	9.1	13.0	3.9
1024-2047.9	..	..	..	..	..	..	..	1.4	.5	1.9	1.3	.5
					(Pounds per home)							
Mean	5.4±1.7	16.8±5.1	50±7.7	58±6.9	59±21	65±7.6	108±13	117±12	163±15	221±18	239±33	102±4.2
Maximum	160	651	925	1,000	1,000	800	1,000	1,200	1,300.2	2,000	1,750	2,000

*Each interval after the first two has double the range of the preceding one.

†Widows, military personnel, students, unemployed and those of unknown occupation that are heads of households. Farm workers and those living in institutions, dormitories, and barracks are excluded.

TABLE 5

Mean Non-Farm Home Fertilizer Consumption by Size of Community

1950 Population range (1000)	Virginia-Georgia, incl. Homes represented (number)	Virginia-Georgia, incl. Mean consumption (lb. per home)	Florida Homes represented (number)	Florida Mean consumption (lb. per home)	South Atlantic Region Non-farm population (% regional total)*	South Atlantic Region Homes represented (% of sample)	South Atlantic Region Mean consumption (lb. per home)
250-500	132	27.1	..	....	2.2	6.2	27.1± 5.4
100-250	290	50.8	176	120.8	11.9	21.7	77.2± 6.9
50-100	187	61.9	162	171.2	8.7	16.3	112.6±11.3
25-50	279	86.3	47	103.5	7.8	15.2	88.8± 9.9
10-25	99	83.9	36	189.4	8.6	6.3	112.0±19.7
5-10	77	70.1	43	206.9	6.2	5.6	119.1±17.6
2.5-5	64	84.1	51	207.5	6.3	5.4	138.8±25.6
1-2.5	65	85.2	46	138.6	5.9	5.1	107.3±15.8
Less than 1	135	76.2	100	125.9	36.2	10.9	97.3±12.0
Unincorporated metropolitan fringe	112	182.9	45	229.9	6.2	7.3	196.4±24.0
Totals	1,440	75.9	706	154.9	100.0	100.0	101.9± 4.2

*1950 Census of Population.

TABLE 6

Mean Non-Farm Home Fertilizer Consumption, by Race

State	Caucasian Homes represented (number)	Caucasian Homes represented (% of sample)	Caucasian Means and its standard error (lb. per home)	All other Homes represented (number)	All other Homes represented (% of sample)	All other Means and its standard error (lb. per home)
Virginia	401	79.5	96.1± 9.6	103	20.4	15.6±4.6
North Carolina	234	72.3	97.4±12.3	90	27.7	24.4±5.9
South Carolina	185	70.9	121.0±14.8	76	29.1	14.9±7.2
Georgia	240	68.4	77.2± 9.3	111	31.6	14.2±5.6
Florida	543	76.9	195.3±11.5	163	23.1	20.5±4.6
South Atlantic	1,603	74.7	130.2± 5.4	543	25.3	18.1±2.5

from 17% for retired people to 78% for laborers, with a mean for all groups of 45%.

The occupational groups are listed in Table 4 from left to right in ascending order of mean consumption per household. It will be noticed also that generally, moving from left to right, the percentage of non-users decreases, the maximum reported in each group increases, the percentage reporting very small quantities decreases, the percentage reporting medium amounts (8 to 32 lb.) remains about the same, and the percentage reporting larger quantities shows an increase.

For the most part, the relative standings of the various occupational groups, with the exception of retired persons, follows the same patterns developed in New England and the Middle Atlantic states, although each occupational group in the South Atlantic states used roughly two to three times as much fertilizer, on the average, as in the other two regions. This is partly due to soil and climatic conditions, and partly to the smaller proportion of the population living in very large cities.

Retired persons sampled in the Middle Atlantic states consumed a mean of 48 ± 10 lb. of fertilizer. In the South Atlantic states, however, the mean consumption of those interviewed was 239 ± 33 lb., or about five times as much. Besides the effects of soils and climate which apply to all groups, the reason for this difference probably is due to the large number of families who move south to retire, buy detached homes, and devote themselves to gardening activities.

The percentages of the total sample represented by each occupational group are in most cases approximately the same as those for the total population of the region. The crude mean for the entire sample of 2,146 households is 101.8 ± 4.2 lb. per household. When the mean is adjusted mathematically so that each occupational group represents its actual weight in the total population, it is reduced slightly to 99.2 lb. per home.

Data of places sampled are summarized in Table 5 by community size-groups. The means for every size-group in Florida were found to be larger than for other states in the region. The means show a tendency to increase as the size of community decreases, the same as in the other regions studied, but to a lesser extent. One reason is that cities in the three largest census classes are not represented in the South Atlantic states.

This general trend does not hold uniformly throughout the region. The usual reasons uncovered in the previous studies are obscured by several factors, such as the particular character of the different cities and towns in various parts of the region. For example, Florida had only two cities in the 50 to 100 thousand class in the 1950 census. These two, Orlando and St. Petersburg, both have relatively small proportions of colored people and factory workers, and unusually large percentages of retired and management people. The average size of building lots and the percentage of detached homes are larger than usual for cities of their size. These conditions all tend to raise the mean for this group. In the 25-50 thousand class are a number of Florida cities, such as Tallahassee and Pensacola, that have relatively large negro populations. This tends to lower the mean for this group.

When due allowance is made for unusual factors such as those just described, it appears that the quantities of fertilizer used per home in the larger cities increase more rapidly as one proceeds from North to South than in the towns and villages. Throughout the region, residents of places with less than 1,000 population used less fertilizer per home than the residents of the larger places.

When the data in Table 5 are corrected to correspond to the true percentage of the 1950 population that lived in each size class in each state, the mean for the region becomes 101.36 instead of 101.85.

The sample included Caucasian, Negro, Mongolian and American Indian households in about their proper proportion to the total population. Data by races is summarized in Table 6. It would not be statistically significant to show data for Mongolian and American Indian households separately because in the South Atlantic states, they are so far outnumbered by the Caucasian and Negro populations. For that reason, the data for "All Other" races in Table 6 may be considered as applicable to Negroes only.

Consumption by Negroes is only slightly greater in the South Atlantic states than in the Northeast, but consumption by Caucasians increases rapidly from North to South. The exception is Georgia, where the presence of Atlanta—the largest city in the region—tends to hold down the mean for Caucasians as well as for Negroes.

When the means are corrected to the true percentage of each race in each state, the mean for this region becomes 102.63 instead of 101.85.

The three corrections to the mean —for size of community, occupation and race — collectively result in a negative 2.31 lb. per household overall correction. Thus the corrected mean for the region becomes 99.54 lb. per home (Table 1).

Even with this relatively large mean usage of fertilizer by non-farm households, the total of 218,100 tons represented only about 4% of all fertilizer used in the South Atlantic states during 1958-59.

California Farmers Start Chemical Trend

TULARE, CAL.—A trend toward chemical fertilizers as compared to barnyard manure seems to be developing in many parts of California. Some feedlot operators within easy hauling distance of vegetable and fruit farms say that manure is becoming more difficult to sell.

At the Taylor Ranch near Ventura, Jerry Griffin, manager, says his manure sales have been extremely slow this year. Pointing to several large stacks of it, he said: "We're willing to sell it at a low price, but not many farmers are interested."

One reason for this, according to a vegetable farmer, is that manure is bulky and requires a lot of handling. With labor becoming more expensive, farmers prefer to apply the less bulky chemical fertilizers or have it done on a custom basis.

"Another reason," said a fruit grower, "is that we don't know what it contains. We might get some noxious weeds or grasses started that might cause an expensive eradication program."

Wade Hampton Logan Dies in South Carolina

CHARLESTON, S.C.—Wade Hampton Logan, 83, founder and chairman of the board of Logan-Robinson Fertilizer Co., died at his residence here, June 28.

At the age of 16 Mr. Logan began a lifetime career in the Charleston fertilizer business when he went to work for the Royal Fertilizer Co. Subsequently he was associated with the Chicora Fertilizer Co., the Virginia-Carolina Chemical Co. and the Etiwan Fertilizer Co. before joining with John W. Robinson, W. Allan Moore, Jr., and others to form the Logan-Robinson Co. in 1923.

He continued active in that firm up to the time of his death, although failing health had curtailed his activities in recent months. In 1950 he was named to the board of directors of the American Plant Food Council, the national organization of the fertilizer industry.

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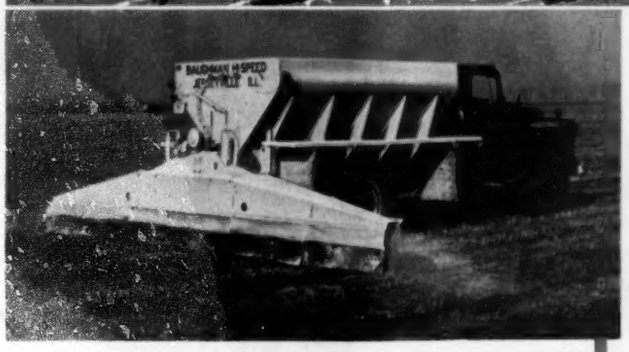

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North Dakotans' Fertilizer Records Aid Evaluation

By Marvin T. Nordbo
and Virgil L. Weiser
North Dakota Agricultural Station

A group of 27 farmers in North Dakota has been keeping detailed records on results of applying recommended rates of fertilizer on small grain crops. These farmers, located in Barnes, Ramsey, Morton, Stark, McLean and Williams counties, are cooperating with the North Dakota Agricultural Experiment Station, Extension Service and the Tennessee Valley Authority in a test-demonstration farm program.

This study is directed to the purpose of testing new fertilizer materials and evaluating the results of applying a recommended and balanced fertilizer program to the entire farm.

These farmers apply the recommended rates of fertilizer based on soil tests and cropping histories of the different fields. They leave unfertilized check strips in each field. These strips are harvested separately to obtain actual measurements of yield differences between fertilized and unfertilized portions of each field. During the past three growing seasons (1957-1959), the cooperators have checked the yield results on 10,652 acres of wheat, barley and oats.

These crops were grown in various parts of the state as indicated previously. The past three years have provided a wide variety of growing conditions in the six counties where the farms are located. Consequently, a portion of the results have been obtained for very favorable moisture and weather conditions while others have been obtained for adversely dry or hail areas. The result is a large variation in crop yield responses to fertilizer treatments.

In some instances, crop yields have been doubled. Other instances show little if any yield response to fertilizer. However, fertilization is not just a one field or one year proposition.

TABLE 1. Average Crop Yield Responses and Returns to Recommended Fertilizer Treatments, 1957-59

Crop	Acres checked	Cost of fert. per acre*	Added return from fert. per acre	Profit from fertilizer per acre	Per cent profit
Wheat fallow	4,019	$2.62	$7.68	$5.06	193
Wheat nonfallow	2,620	5.81	9.14	3.33	57
Barley fallow	369	2.53	6.27	3.74	148
Barley nonfallow	3,319	5.78	7.47	1.69	29
Oats nonfallow	366	6.20	6.79	.59	10
All crops	10,693	$4.50	$7.89	$3.39	75

*These cost figures are estimated average costs, including application, of several different kinds of commercial fertilizers.

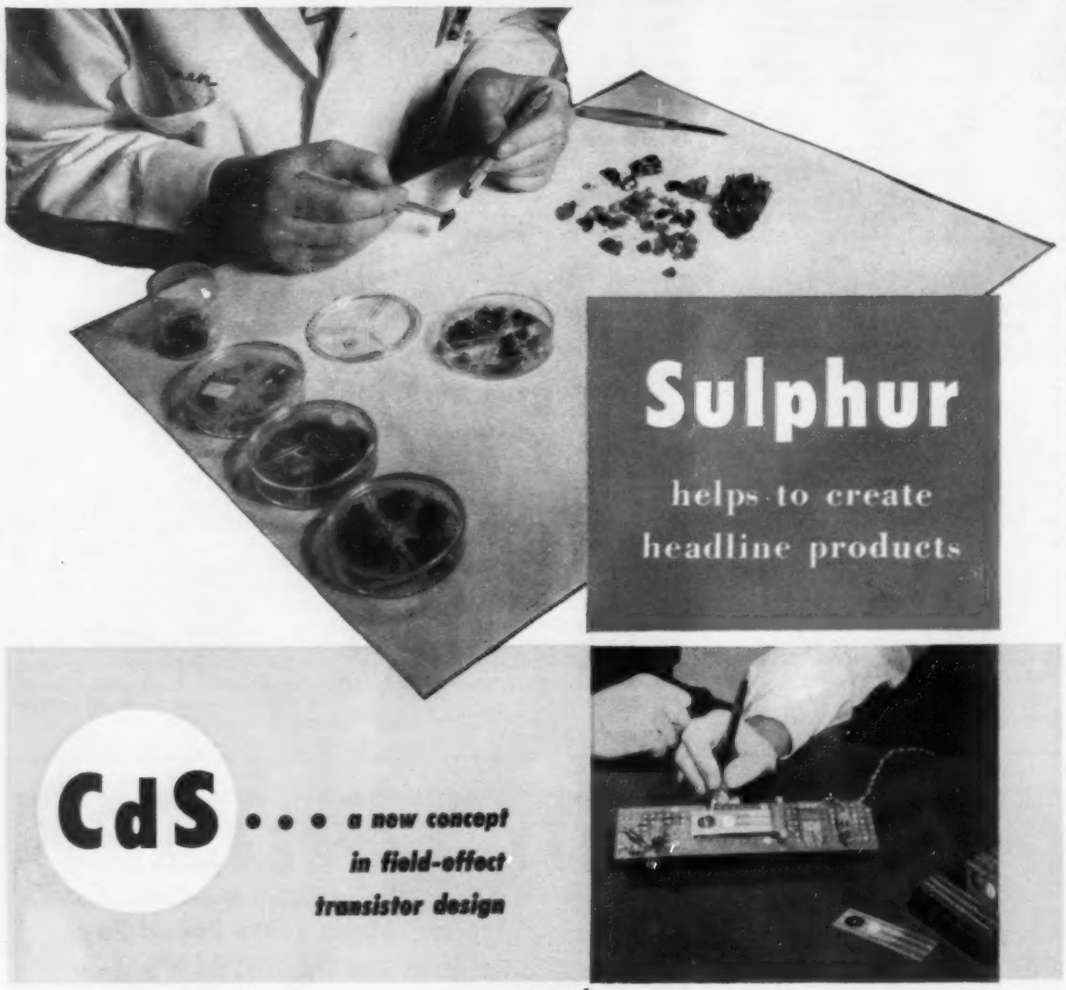
If one could forecast exact weather conditions from year to year, the problems associated with determining profitable fertilization rates would be greatly reduced. Since this is not the case, the next best alternative is to aim for the long run. In fact, this is the planning framework under which most farmers must operate. Correspondingly, this article reports the average fertilizer results from all fields for the three years for the group of farmers mentioned above.

The results obtained from the various crops are summarized in Table 1. Crops grown on fallowed land are summarized separately from those grown on nonfallow because of differences in fertilizer requirements and costs. Land which was fallowed in the previous season normally requires only a phosphate fertilizer whereas land which was cropped during the previous season needs an application of nitrogen in addition to phosphate. Consequently, fertilizer cost on nonfallow is substantially higher than for crops seeded on fallow. The cost of fallowing is not included in this analysis because this acreage would have been fallowed regardless of the fertilizer program used.

The most profitable returns from fertilizer have been obtained on wheat and barley grown on fallowed land (193 and 148% net return, respectively). Fertilizing wheat and barley on nonfallow land has produced substantially lower percentage returns. However, if these returns are compared with other earnings on capital, they may be the most profitable investment alternative.

The fertilizer experiences indicated in Table 1 show that the first fertilizer dollars should be used for wheat and barley production on fallowed land. This investment has the potential of earning the greatest dollar returns. A closer look at the results in Table 1 shows also that dollar profits per acre are almost as high for wheat seeded on nonfallow as for barley seeded on fallow land ($3.33 and $3.74, respectively). This indicates a possibility for increasing net income from a limited acreage. Acreage allotments may restrict the acreage which can be seeded to wheat on the farm, yet the operator is interested in getting the highest possible income from this limited acreage. Oats has produced some high yield responses to fertilizer treatments but its market value is relatively low, making it more difficult to obtain profitable responses. The average returns for all crops checked on these farms are $3.40 more net income per acre or a 75% interest rate on the money invested.

Most farmers are interested in earning more "take home pay." On the basis of results shown here, $1,000 more net income is possible by applying the proper rate of fertilizer to 200 acres of wheat on fallow land. Or, 300 acres of wheat on nonfallowed land properly fertilized will return $1,000 added net income. Barley production on the other hand, would require 268 acres on fallowed land and about 590 acres on nonfallowed land to produce an added $1,000 of net income.



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Naugatuck Completes Preliminary Engineering, Lets Contract for Plant

MONTREAL — A new basic pesticide plant moved a step nearer reality with the announcement by Naugatuck Chemicals, division of Dominion Rubber Co., Ltd., that preliminary engineering has been completed and contracts were let. The plant will be located on a 51.6 acre site, adjacent to the Canadian Chemical Co. property in the Edmonton area.

The Edmonton plant is the main part of a $1,600,000 expansion program in agricultural chemicals being undertaken by Naugatuck. Representing an investment of $1,400,000, the western unit will produce 2,4-D, 2,4,5-T, M.C.P., and pentachlorophenol.

The Edmonton plant is advantageously situated from the raw material standpoint.

The plant is also designed so that it can readily expand into the production of some of the more basic chemicals used in the production of 2,4-D, and these will then be supplied to the Elmira unit as well.

Other projects in the Naugatuck program will include an additional $200,000 investment in Elmira for full scale production of Diethyl Toluamide, an insect repellent, and Ethoquin, an animal-feed supplement used to prevent loss of nutritional value in feed during storage. Both products are in production now in semi-works plants, but their increasing use has created a need for larger capacity units if the market demand is to be met.

CHANGES OWNERSHIP

PHOENIX, ARIZ.—Gilliland's N H 3 Service, dealing in fertilizers at 539 East Walker Lane here, is now under the ownership of G. B. Graham.

FMC Names New Production Manager

NEW YORK — Leonard G. Nussbaum has been appointed production manager for the chemicals and plastics division of Food Machinery & Chemical Corp. He will be replaced as resident manager of the division's Nitro, W. Va., plant by A. G. Draeger.

Previous to his assignment at Nitro, Mr. Nussbaum had been production manager at the division's Baltimore, Md., facility. Before going to Baltimore, he spent 12 years at the South Charleston, W.Va., plant of the Chlor-Alkali division, working in production, process and engineering capacities.

Mr. Draeger has been production manager at Nitro for the past year and a half. His earlier assignments included work in process development and engineering.

Malaya Interested In U.S. Fertilizers

PORT MALACCA, MALAYA—The Malacca Chamber of Commerce, Federation of Malaya, is interested in bagged ammonium sulfate fertilizers from the U.S. for direct shipment to the Port of Malacca for rubber estates, according to a story in the Foreign Commerce Weekly.

The chamber indicates it can purchase 500 tons monthly if prices are competitive with European and Japanese fertilizer now used. They also are interested in smaller quantities of crushed phosphate rock and urea. Difficulty lies in limited port facilities and movement of cargo from vessels to shore on lighters. No U.S. vessels now call at Malacca.

U.S. exporters of fertilizer may wish to send quotations to Goh Keng How, President, Malacca Chamber of Commerce, 89 Wolferstan Road, Malacca, Federation of Malaya.

RESEARCH DRAMATIZED—Effectiveness of a promising pesticide material on household flies is observed by Philip Cooper (second from left), student in the household insecticide laboratory of the Niagara Chemical Division, Food Machinery and Chemical Corp. Philip, who attends nearby Lyndonville high school, was awarded the opportunity by the Lyndonville faculty to visit a company of his choice for a week. He selected Niagara's Middleport, N.Y., plant where he observed the step by step development of a pesticide product.

Describing test methods in the above scene is Owen Greenwell while John Leigh and Eugene Oliver look on at right.

During the past year, as part of its extensive chemical education program, Niagara has also conducted plant tours for visiting school groups, participated in local high school programs, and helped to encourage broader interest in research and the study of chemistry.

Veteran Retires

PHOENIX, ARIZ.—M. F. (Mac) Wharton, secretary-treasurer of the Arizona Fertilizer & Chemical Co., Phoenix, has retired following 23 years with the company.

Mr. Wharton joined Arizona Fertilizer & Chemical Co. in 1937 and will remain with the company in an advisory capacity and as a director.

FEW SURVIVORS

SAN FRANCISCO, CAL.—Of approximately 2,000 chemical compounds tested as soil fungicides, not more than ten warranted additional investigations in a systematic search for a safe, effective fungicide harmless to crop plants, reports J. B. Kendrick, Jr., Department of Plant Pathology, Riverside, University of California.

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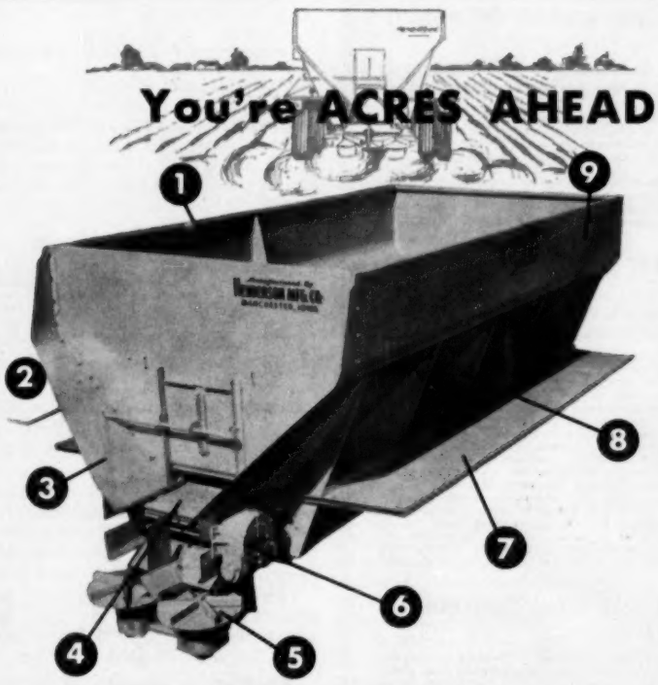

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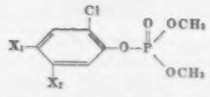
PATENTS and TRADEMARKS

2,943,018

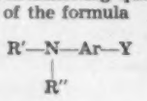
Methods for Controlling Parasites Attacking Animals Using Phosphoroates. Patent issued June 28, 1960, to Lisby L. Wade and Mark G. Norris, Jr., Lake Jackson, Texas, assignors to the Dow Chemical Co., Midland, Mich. A method for controlling parasites attacking warm-blooded animals which comprises administering to the animal a chemotherapeutic dosage of a systemic agent comprising a phosphoroate having the formula



wherein X_1 represents a member of the group consisting of chlorine and tertiary-butyl and X_2 represents a member of the group consisting of chlorine and hydrogen, and wherein X_1 is tertiary-butyl, X_2 is hydrogen.

2,941,921

Inhibiting the Growth of Plant Viruses. Patent issued to Walter A. Darlington, Dayton, Ohio, assignor to Monsanto Chemical Co., St. Louis, Mo. The method of inhibiting the multiplication of plant viruses comprising applying to living plants a virus growth-inhibiting quantity of a compound of the formula

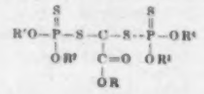


wherein Ar is an aromatic hydrocarbon radical having from 6 to 12 carbon atoms, R' and R" are selected from the class consisting of hydrogen and aliphatic hydrocarbon radicals having from 1 to 18 carbon atoms, and Y is selected from the class consisting of hydroxyl and thiol radicals.

2,941,920

Pesticidal Phosphorus Esters. Patent issued to Joe R. Willard and John F. Henahan, Middleport, N.Y., assignors to Food Machinery & Chemical Corp., New York. A method for controlling pests comprising contacting said pests with an effective concentration of a compound as follows:

As a new composition of matter a compound of the formula:



wherein R^1, R^2, R^3 and R^4 each represents a lower alkyl radical and R is selected from the group consisting of hydrogen, lower alkyl radicals, phenyl and chlorophenyl radicals.

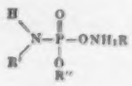
2,941,879

Method of Killing Grass. Patent issued June 21, 1960, to Lyle D. Goodhue, Bartlesville, Okla., assignor to Phillips Petroleum Co. A method of killing grass which comprises applying to the place at which said grass is to be killed a small but effective amount to accomplish said killing of a compound selected from the group consisting of N,N-dimethyl-S-methylsulfenyl dithiocarbamate, N,N-dimethyl-S-ethylsulfenyl dithiocarbamate, N,N-dimethyl-S-isopropylsulfenyl dithiocarbamate, and N,N-dimethyl-S-n-propylsulfenyl dithiocarbamate.

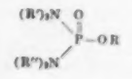
2,940,896

Quaternary Ammonium and Phosphoramide Ester Attractants and Insect Control Therewith. Patent issued June 14, 1960, to Oliver S. Sprout, Jr., North Hills, Pa., assignor to Pennsalt Chemicals Corp.

In the control of roaches and like insects the improvement which comprises placing at a site available to the insects and conducive to their extermination, an attractant selected from the group consisting of 3-p-alkylphenoxy - 2-hydroxyalkyltrialkyl ammonium bromides and chlorides in which the alkyl groups contain about 2 to 10 carbon atoms, N,N-dialkyl-2-thionothiazolidonium bromides and chlorides in which the alkyl groups contain about 8 to 12 carbon atoms, alkyl alkylbenzyl-N,N,N',N'-tetraalkylthiuronium chlorides and bromides in which the alkyl groups contain from 1 to about 12 carbon atoms, fatty amine acetates in which the alkyl group contains about 8 to 18 carbon atoms, phosphoramide ester salts represented by the formula



wherein R and R' are alkyl groups containing about 10 to 14 carbon atoms and where R" is an alkyl group containing from 1 to about 2 carbon atoms and phosphoramide esters represented by the formula



where R is an alkyl group containing about 8 to 12 carbon atoms and where R' and R" are alkyl groups containing from 1 to about 2 carbon atoms.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

Trizone, in capital letters, for soil fumigant. Filed March 13, 1959, by the Dow Chemical Co., Midland, Mich. First use Nov. 5, 1958.

Rosar, in heavy capital letters, for powder insecticide. Filed May 18, 1959, by Alfran Distributors, Inc., Catskill, N.Y. First use, April 13, 1959.

Lawn-Gard, in capital letters, for fertilizer. Filed Jan. 5, 1960 by Ozark-Mahoning Co., Tulsa, Okla. First use Aug. 20, 1959.

Vita-Peat, in hand-drawn letters, for sedge peat. Filed Sept. 8, 1958, by Vita-Peat, Inc., Bethel Island, Cal. First use Aug. 28, 1951.

Combo, in capital letters, for combination fertilizer and weed killer. Filed Nov. 12, 1959, by L. Teweles Seed Co., Milwaukee. First use Nov. 5, 1959.

Silikil, in capital letters, for insecticide. Filed Feb. 18, 1960, by United-Heckathorn, Richmond, Cal. First use Aug. 31, 1959.

Design, crown and robe with hand-drawn initials S and H inscribed, for insecticide. Filed Oct. 31, 1958, by Aeron, Inc., New York. First use Oct. 6, 1958.

Books on Pesticides

THE GARDENER'S BUG BOOK (1956)

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound $7.50

HANDBOOK OF AGRICULTURAL CHEMICALS —Second Edition

Lester W. Hanna, Agricultural Enterprises, Forest Grove, Ore.

As the title implies, this book contains broad information and tables on not only the chemical products themselves, but also on toxicity, residues, registration, terminology and emergency treatments. A fold-out chart gives compatibility data on numerous materials for formulators. Information on fertilizers includes soil elements, trace minerals, and application techniques. Descriptive material is also presented on fumigants, fungicides, herbicides, systemics, growth modifiers, livestock chemicals, rodenticides, and antibiotics. Information on materials and techniques is written fully with illustrations and tables. 490 pages..... $5.95

INSECT PESTS OF FARM, GARDEN and ORCHARD—Fifth Edition (1956)

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PESTS OF STORED GRAIN AND GRAIN PRODUCTS

Richard T. Cotton, Stored Product Insect Section, U.S. Department of Agriculture, Washington, D.C.

Dr. Cotton's valuable book is full of practical up-to-date information on the problems of insect and rodent contamination. Some of the main topics covered are: methods of detecting contamination in cereal from rodents, birds and insects; prevention and control of insect infestation in grain; new methods of storage; methods of sanitation in grain storages and processing plants; the latest information on fumigation; heat sterilization; and protection of stored seed. This book is concise, readable, completely indexed and includes over 100 figures and illustrations. 386 pages, 8½x5½", photo offset, illustrated, cloth bound.... $4.00

METHODS OF TESTING CHEMICALS ON INSECTS—Vol. I

Harold H. Shepard, chief, Agricultural Chemicals Staff, Commodity Stabilization Service, U.S. Department of Agriculture, Washington, D.C.

This is Vol. I of a proposed three-volume study. It describes methods of studying the effects of chemicals on the physiology of insects. Also covered are general techniques for applying chemicals to insects. It includes laboratory screening methods for determining the killing efficiency of insecticidal sprays, dusts and fumigants. Its 14 chapters are authored by prominent entomologists from USDA and State Experiment Stations. 355 pages; 8½x5½" photo-offset, cloth bound $5.00

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Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

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Dr. E. R. de Ong

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INDUSTRY PERSONNEL NEWS

Chemagro Representative

KANSAS CITY—James L. Carnes has been appointed technical field representative for the eastern region of Chemagro Corp., Kansas City.

James L. Carnes

Mr. Carnes will make his headquarters at the company's regional office in Richmond, Va.

Prior to joining Chemagro, Mr. Carnes was engaged for the past three years in research and development of agricultural chemicals and has co-authored several technical papers on allied subjects.

●

Max J. Harvey Promoted

NEW YORK—Max J. Harvey has been promoted to midwestern regional manager for the agricultural division of American Cyanamid Co. Edward H. Smythe, marketing director for the division, announced that Dr. Harvey will replace John H. Howard who has been elevated to national sales manager of all Cyanamid agricultural products.

Dr. Harvey, formerly assistant regional manager for the midwest region, joined Cyanamid in 1950 as a veterinarian. He is a graduate of Kansas State University and received his degree in veterinary medicine in June of 1945.

●

Atlanta District Manager

NEW YORK — R. Paul Jolley has been named manager of the Atlanta district office of Commercial Solvents Corp., according to an announcement by W. Ward Jackson, vice president of sales for the company.

R. Paul Jolley

Mr. Jolley joined CSC in 1959 as a sales representative for the company's agricultural chemicals department. In his new capacity Mr. Jolley will direct the sales activities of CSC salesmen handling industrial and agricultural chemicals, and animal nutrition products in the states of Florida, Alabama, Georgia, South Carolina and North Carolina.

Prior to joining Commercial Solvents, Mr. Jolley was associated with the Georgia Department of Agriculture as chief fertilizer control official. He had previously been with the Virginia-Carolina Chemical Corp.

●

Named to Research Posts

MIDDLEPORT, N.Y. — Appointment of Kenneth L. Hill as head of its herbicide laboratory and Eugene A. Lojewski as a chemist in its organic synthesis laboratory have been made by the Niagara Chemical Division of Food Machinery & Chemical Corp.

Dr. Hill will be responsible for general supervision of the herbicide laboratory. He most recently served as a plant physiologist for the U.S. Department of Agriculture at North Carolina State College where he also received his Ph.D.

Mr. Lojewski joins Niagara after serving for six years with Olin Mathieson Chemical Corp. and three years with Allied Chemical Corp. He will work in Niagara's organic synthesis program on ne wcompounds to be screened as potential pesticides.

●

Sohio Manager Named

LIMA, OHIO—H. J. Coleman, sales manager of the Sohio Chemical Co., Lima, announced that James W. Bibbins has been appointed manager of agricultural sales.

Mr. Bibbins joins the Sohio Chemical Co. after having served as branch manager for the Northrup, King & Co. for the past two years. Prior to his association with Northrup-King he served with Central States Seed Service Co. as vice president in charge of sales.

Mr. Bibbins graduated from Michigan State University in 1945 with a Bachelor of Science degree in Agriculture.

●

Assistant Sales Head

BALTIMORE — Appointment of William M. Rohrer as assistant sales manager, agricultural chemicals, is announced by D. N. Hauseman, vice president, Davison Chemical Division of W. R. Grace & Co.

William M. Rohrer

A native of San Francisco, Mr. Rohrer attended schools in Bronxville, N.Y., and Deerfield, Mass., and was graduated from Yale with a major in industrial administration. He joined Grace after graduation.

From assignments in corporate research and the Peruvian Desk in the parent company, Mr. Rohrer went first with Naco Fertilizer Co. and then with Thurston Chemical Co., Grace subsidiaries, as purchasing director. He came with the Davison Division in 1954.

●

Special Assistant Named

LOS ANGELES — Appointment of Arthur R. Ramirez as special assistant to George L. Oppel, director of production for U.S. Borax & Chemical Corp., was announced by R. T. Edgar, vice president in charge of production.

Mr. Ramirez holds a bachelor of science degree in mechanical engineering from Louisiana State University and had 14 years industrial and engineering experience before joining U.S. Borax, Mr. Edgar said. His initial duties will be in the area of maintenance programming.

●

Promoted by Dow

MIDLAND, MICH.—W. L. (Lew) Corbin has been named manager of the resale products section of agricultural chemicals sales for the Dow Chemical Co., according to W. W. Allen, sales manager. In this capacity he will be in charge of marketing all products sold through Dow's retail farm dealer organization.

W. L. Corbin

Mr. Corbin is being transferred to Dow headquarters in Midland from the company's Chicago sales office where he has been manager of agricultural chemicals sales for that territory since 1955. Earlier Mr. Corbin had been an agricultural chemicals salesman in Dow's New York sales office.

The appointment has been made to fill the vacancy left by the death of Glenn Gullikson who had held the job of resale products manager since 1956.

Hooker Appoints Four

NIAGARA FALLS, N.Y.—William F. Christopher has been appointed director of marketing for Hooker Chemical Corp., announced F. Leonard Bryant, vice president, who is responsible for marketing, research and general development.

Wm. F. Christopher

Mr. Christopher comes to the newly created position at Hooker from General Electric Co. where, since 1955, he has been a manager of market development in GE's chemical materials department, chemical and metallurgical division, at Pittsfield, Mass.

Other appointments in Hooker's western chemical division were announced by James G. Baldwin, division general manager.

Robert M. Sherwin was named to the newly created position of technical manager of the division which has plants at Tacoma, Wash., North Vancouver, B.C., and Spokane, Wash. Mr. Sherwin has been plant engineer at Tacoma.

Chester D. Roberts, formerly traffic manager at the Tacoma works, is appointed to the new position of traffic manager for the western chemical division.

Robert B. Means, of the plant's engineering department, is promoted to Tacoma plant engineer, replacing Mr. Sherwin.

●

Joins Simplot

POCATELLO, IDAHO — Bernard L. Brown has joined the J. R. Simplot Co. as agronomist for the minerals and chemical division. He will work with industry representatives, college and experiment station personnel and consumers in developing soil fertility data and programs aimed at customer service improvement.

Mr. Brown was formerly with Montana State College where he was extension soils specialist since April, 1958.

●

New Plant Manager

MARSEILLES, ILL. — Dever P. Biggerstaff has been appointed plant manager of the National Phosphate Corp. plant here, announced Erol Beker, president.

Mr. Biggerstaff graduated in 1942 from the University of North Carolina. Upon graduation he joined General Chemical Co. and was later employed by the Davison Chemical Division of W. R. Grace & Co.

●

Armour Appoints Two

ATLANTA, GA.—Thomas E. Sharp has been appointed market development manager of the Armour Agricultural Chemical Co., announced W. E. Shelburne, president.

Mr. Sharp was with the research division of Armour & Co., Chicago, from 1951 until his present appointment. Prior to that time, he was associated with Standard Oil of Indiana in research and technical sales for 14 years.

In another personnel change, George C. Smith has been named Montgomery division manager succeeding R. A. Ellington, who retired effective July 2, 1960, after 37 years of service.

Announcement of the change was made by H. Vise Miller, vice president and general manager of the firm's fertilizer division.

A graduate of Auburn University, Mr. Smith had been sales aide in Armour's Columbus, Ga., division, since August, 1958.

●

Midwest Salesman

CHICAGO — Velsicol Chemical Corp. announced that Curtis N. Overton has been appointed sales representative for the agricultural chemicals division. Mr. Overton's appointment will provide additional sales and technical service to customers in the middlewestern states.

Curtis N. Overton

Mr. Overton is a graduate of the University of Tennessee with a B.S.A. degree in animal husbandry and agronomy. He also studied extension methods at the University of Arkansas. Mr. Overton was formerly a technical sales representative for California Spray-Chemical Corp.

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BIG YEAR

(Continued from page 1)

especially in the Central and Southeastern areas where replanting was widespread, but responded rapidly to warm weather in June.

Weeds are more prevalent than usual in the North Central area as cultivation has been hindered and effectiveness of sprays reduced by frequent rains. A weak tropical storm brought heavy deluges and local flooding over the eastern half of Texas during the last half of June to end a critical dry period. Heavy rains also fell in the central Mississippi and lower Ohio River Valleys with lowland flooding, and late June showers brought welcome moisture to the South Atlantic region, but rain is needed in the Central Gulf area.

Irrigation water seems certain to be short in Utah, Nevada, and Wyoming as stream flow is light and stored supplies well below average. Reservoir supplies should carry other sections through the summer, although shortages may develop on some of the smaller projects.

Harvested acreage of the 59 crops included in the USDA summary now looks likely to total about 323 million acres, slightly below last year but a little above the low level of 1956, 1957, and 1958. Acreage for harvest follows the crop planting pattern rather closely as only light to moderate losses are in prospect for all crops.

Winter wheat abandonment and diversion to uses other than grain are among the lowest of record. Spring crops were planted late in most of the country, and show less than the usual growth for July 1 but with reasonably favorable summer weather hopes are bright for relatively light losses of the planted acreage.

Based on July 1 conditions, the nation's corn crop is expected to total 4.1 billion bu., well above the 3.3 billion bu. average and second to last year's record 4.4 billion bushel crop. The 1% decrease from last year's planted acreage is a contributing factor in the smaller production.

The yield per harvested acre, indicated at 48.7 bu. falls considerably below the 51.5 bu. realized in 1959 but is far above the average of 41.6 bu. Corn planting was delayed this year as wet weather during May held field work in major corn producing areas to a virtual standstill. More favorable weather the first half of June permitted rapid progress but rains hindered planting of the scattered acreage put in during the last half of the month.

As a result of the delayed planting, a higher than usual proportion of the acreage may be susceptible to early fall frosts.

PLANT

(Continued from page 1)

fertilizer materials for many crops with important potentialities in high analysis mixed fertilizers, Mr. Childs said. The product has not heretofore been used extensively because of its high price. It contains two of the three primary elements essential for plant growth—potash and nitrogen. Its combined potash-nitrogen plant nutrient values of 60% make this compound one of the most highly concentrated plant foods available. It does not contain chlorine, sulphur or any other elements or substances deleterious to plant or animal life.

Nitrate of potash is expected to find wide use in the formulation of fertilizers for tobacco, citrus, truck and other farm crops which require potash free of chlorine and sulphur and nitrogen in the nitrate form.

The plant will be constructed and engineered for easy and economical expansion, and for the production of associated chemicals, Mr. Childs said.

Fertilizer Conference Dates Announced

AUBURN, ALA. — Announcement is made by Dr. Walter F. Sowell, extension soils specialist and planning committee chairman, that July 28-29 are the dates set for the 1960 Fertilizer Conference and Tour of Field Experiments.

Dr. Sowell said the tour will include experimental work being done at the Brewton Experiment Feld, the Gulf Coast Substation near Fairhope and the Spring Hill Ornamental Horticulture Field Station.

Legislation Puts Biological Scientists In Public Eye, Says ESA Panel

By JOHN R. ULRICH
Special Croplife Writer

SPOKANE, WASH.—Recent legislation on residual chemicals has focused public attention on biological scientists, a panel discussion brought out here at the 44th annual meeting of the Pacific Branch of the Entomological Society of America. H. C. Manis, University of Idaho, was panel chairman.

A highlight of the meeting was a symposium on "Residue Laws and the Entomologist" with L. C. Terriere, Oregon State College, as discussion leader, and Harold Reynolds, University of California (Riverside); Robert W. Every, Oregon State College; L. R. Gardner, California Spray-Chemical Corp., Richmond, Cal., and Edward W. Anthon, Washington State University, as speakers.

In a pre-symposium interview Croplife recorded the following:

Mr. Terriere: The forum is to examine the question of residue laws and their effect on the professional actions of entomologists and other scientists who deal with the control of pests.

Mr. Reynolds: We have had to deal with this kind of legislation before. Scientists must operate within the legislation. This legislation has increased the stature of biological scientists by focusing public attention on their work. The laws will have a beneficial effect in the long run and already have had a profound effect in some areas.

Mr. Terriere: Public furore over residues has made funds for research easier to get.

Mr. Reynolds: Despite the cranberry episode the public attitude is one of "concern" rather than "fear."

Mr. Anthon: There is a great need to get more information to the public. Articles like a recent one in a men's magazine seem too fantastic to be believed, but they are.

Mr. Every: The researcher faces many problems. The scientist finds himself in a bind between developing residue controls and the demands by farmers for better pest control methods. The controls are getting stricter and the tolerances lower.

Mr. Reynolds: Pesticides are essential to production. Yields of some crops have been increased three times by use of pesticides and without them modern crop production could not keep up with the expanding population.

Mr. Anthon: Pesticides are getting a more careful screening before they are marketed. A major concern today is whether new pesticides can be developed fast enough to keep up with resistant strains of insects.

Mr. Terriere: It used to be four or five years between the time a new pesticide was developed and the time a resistant insect strain developed. Now there sometimes is a resistant strain by the time the new product is ready to go on the market where the new product is an adaptation of a compound used in early pesticides. Even so the lag is down to two or three years.

Mr. Every: Some of the regulations now in effect are unrealistic but the situation can be rectified. Unrealistic regulations lead to confusion and improper use. Farmers will make an honest effort to abide by realistic regulations. Oregon is trying to work with government to set up a technical advisory committee to aid legislators. (A resolution to this effect was passed by a later business session of the meeting.)

Mr. Terriere: The public has been misled to believe this is a new problem. It has been with us for many years and residues are always considered in developing chemicals for use on foods. OSC has had a residue laboratory since 1915 and Pacific Northwest and California scientists have been working on lead arsenates at least since the early 1920's. Residual effect is best for killing most insects and we can't get along without residual chemicals.

Mr. Every: We couldn't raise fruit if it were not for pesticides. The problem is to keep the residual effect at a safe level.

(None of the men ever heard of a single case of harm to a human from the residual effect of pesticides. They admitted the cancer problem was a new one "and that's what scares everyone.")

Mr. Anthon: Every pesticide we use on fruit is tested exhaustively and if there is the slightest indication of harm it is tossed out as a possible spray for edibles. After a new systemic insecticide had been tested on animals about 15 members of the station staff "ate scads of treated apples, peaches and other fruit" and we found no trace of the pesticide in any of our systems.

Mr. Terriere: Pesticides have resulted in yields more than doubled, cleaner and better foods than ever. Why, this is the only country in the world where we can afford to throw away the wormy lettuce.

Mr. Gardner: Residue regulations have increased the cost and extended the time and meant a higher percentage of research effort to produce a new pesticide. Developing a new agricultural chemical is more costly and more time consuming than developing a new medicine. Furore over residues has not affected sales but it has resulted in more requests for advice on their use.

Vernon M. Stern, University of California Citrus Experiment Station, Riverside, in a paper entitled "The Present and Future Scope of Integrated Control," said natural control of insects through their parasites is gaining ground but warned that such control was no more the whole

PCA

(Continued from page 1)

of potash was made in March, 1959. The ore mined during the startup period was of the satisfactory grade and thickness indicated by the company's extensive drilling and exploratory work. Primarily because of seepage of water into the shaft it was necessary to suspend operations in the early part of November, 1959.

Cementation Co. (Canada), Ltd., was engaged to control the water flow and secure the shaft. They are now proceeding with the program announced earlier of grouting the entire shaft area. It is estimated perhaps a year will be required to complete the work at a cost of approximately $900,000.

It is believed this grouting process is a solution to the water problem encountered earlier and will put this property in condition so that it may be brought into successful operation.

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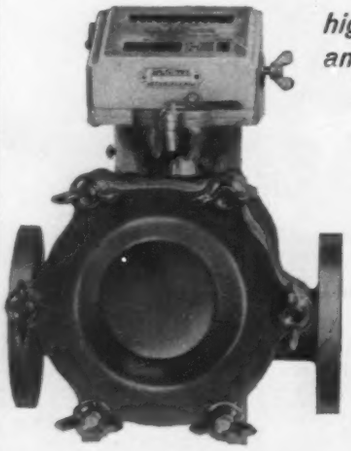

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answer to the problem than is use of pesticides.

The two control methods must be used to complement each other, Dr. Stern said.

"Insecticides became the key to controls because the public demands fast action. They want results for the money they expend right now," he said.

Dr. Stern said that it would be undesirable to return to conditions before man upset the balance of nature. "We may, however, utilize some the the mechanisms that existed before man's modifications, to establish new balances in our favor."

Dr. J. J. Davis, Hanford Atomic Products Operation, AEC, Hanford, Wash., drew a laugh at the meeting by relating how jackrabbits are giving their thyroids to science.

"It is far easier to catch three jackrabbits and check the residual iodine isotope in their thyroids than to sample sage brush to determine the level of radioactive iodine going out the stacks of our reactors," Dr. Davis said.

Dr. Davis' paper on "Accumulation of Radioactive Contaminants by Aquatic Insects," related how the level of radioactivity of the Columbia River below Hanford was constantly supervised by studying the insects. Insects act as accumulators of radioactivity and ease testing in the same way the jackrabbits do.

Both M. P. Jones, national president of ESA, and David G. Hall, Agricultural Research Service information officer, cited the need for better public relations programs by scientists to acquaint the public with scientific progress.

Norman E. Johnson, Weyerhaeuser Co. entomologist, described studies being made in changing the growing cycle of cones to frustrate cone-attacking insects. Fertilizers to stimulate tree growth and growth retardants are both studied.

More than 275 entomologists and their families attended the meeting—many as a stopover on summer vacations.

At the final business session, Dr. Ray F. Smith, University of California at Berkeley, was named chairman-elect and Santa Barbara, Cal., was selected as the site of next June's convention. The new chairman is C. H. York, Shell Chemical Co., Los Angeles. Frank Kirkpatrick, American Cyanamid, Fresno, and Sidney Jones, Oregon State College, Corvallis, were elected to the executive committee.

Fungicide Colloquium Program Announced

WASHINGTON — The "Fungicide Colloquium," for many years an important part of the program of the annual meetings of the American Phytopathological Society, will be held Aug. 30 at 3 p.m. at the American Baptist Assembly, Green Lake, Wis., Aug. 28-31, 1960.

The program for the Colloquium has been announced by Dr. Saul Rich, Department of Plant Pathology, Connecticut Agricultural Experiment Station, chairman, as follows:

1. "Prospects for an Antiviral Agent," by Dr. W. E. Rader, Shell Development Co., Modesto, Cal.
2. "Cooperative Planning for Research on Pesticides," by Dr. Noble Clark, associate director, Wisconsin Agricultural Experiment Station.
3. "The Tenuous Trail from Tube to Trial," by Dr. R. A. Ludwig, director, research station, Canada Department of Agriculture, Kentville, N.S.
4. Presentation of New Fungicide Compounds by Industry Representatives.

FIRE HITS WAREHOUSE

SPRINGFIELD, MASS. — Fire detroyed a warehouse at the D. L. Gates Farm and Garden Supply Store, Inc. Donald L. Gates, store owner, estimated damage to the 2½-story structure at $50,000.

Gilman Paper Announces Expansions

NEW YORK—Charles Gilman, Jr., executive vice president, operations, of Gilman Paper Co., announced a multi-million dollar capital expenditure program involving a number of mill additions.

A new third machine, a 236 in. width Beloit Paper Machine, for the manufacture of light, medium, and heavy weight unbleached kraft papers at St. Marys, Ga., will enable Gilman to transfer to the South some of the kraft specialty grades now being made at the Gilman, Vt., mill.

The capital expenditures at the Vermont plant involve the rebuilding of No. 2 Paper Machine to increase its speed. This rebuild will call for a new Beloit pressure head box, additional conventional dryers, as well as high temperature dryers, new tub sizing equipment, a new suction press section, and special paper creping devices.

Program for Canadian Conference Announced

MONTREAL—Some 200 delegates from across Canada and some from the U.S. are expected to attend the 15th annual convention of the Canadian Fertilizer Assn. at the Manoir Richelieu, Murray Bay, Que., Aug. 21-25.

Among the papers to be presented will be one on forest fertilization by Dr. Paul L. Aird of the Canadian International Paper Co., Grenville, Que. Dr. Aird will report on the experiments in tree fertilization being conducted at his company's Harrington forest farm and other locations.

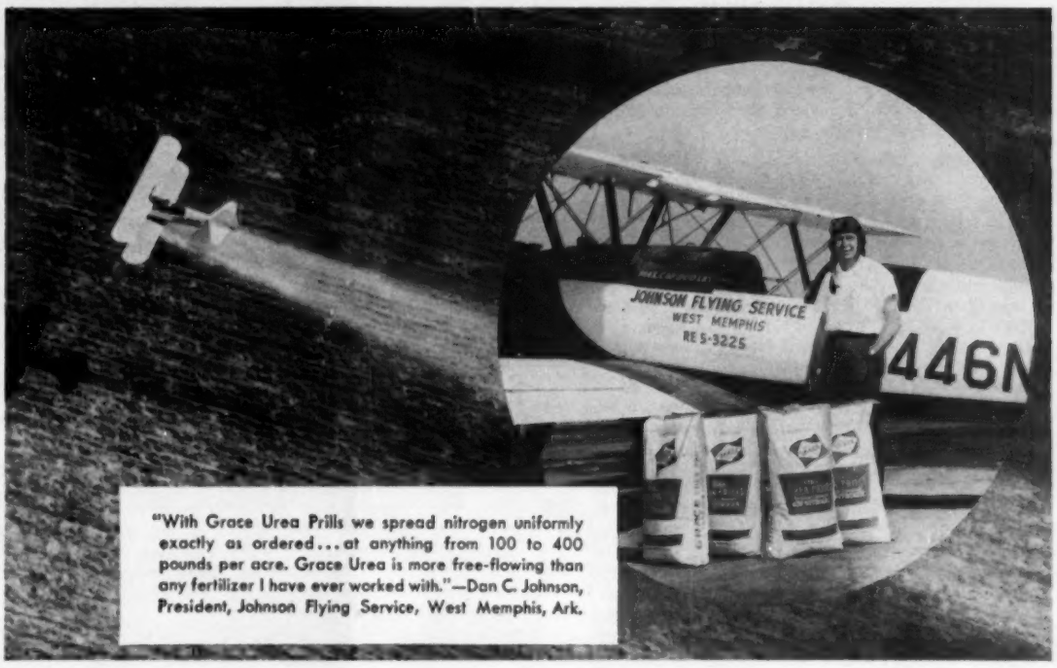
Dr. W. A. Garman of the National Plant Food Institute, Washington, D.C., will report on the eighth international grassland congress being held in England this month. L. R. Daigneault of Cockfield Brown & Co., Montreal, will speak on "Preparing the Soil for Sales" and L. A. Lyone Heppner of the Confederation Life Assn., Montreal, will address the conference on "You Don't Sell Things, You Sell People." John Fisher of the Canadian Tourist Assn., Toronto, has been invited to address the banquet meeting.

Committee chairmen making convention arrangements include Al Lambert and Lorimer Witworth of Quebec City; Harold Sewell, Paul Bastien, Arthur O'Donaughue, Delbert and Vera Dupre of Montreal and Alex Mooney (president of the association), Roy Pennington and Richard Allman of Toronto.

H. H. Skelton of Montreal is general convention chairman.

GOODPASTURE DEALERS

STANTON, TEXAS—The Stanton Seed & Chemical Co. recently became dealers for Goodpasture Fertilizers, which are manufactured at Brownfield, Texas. Among the other new dealers using Goodpasture Fertilizers is the C. V. Ball Implement Co. of Lamesa, Texas.



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Squeeze Still on Farmers, But Fertilizer Regarded as Growers' Essential Profitmaker

THE SQUEEZE on farmers hasn't been talked about as much lately as it was formerly, but it is still a factor to consider in mapping sales strategy. The gradually rising costs of things the grower buys in the face of not much betterment in his income does not make for optimism in the ranks of those who sell to the farmer.

Actually, the prices of fertilizers and pesticides have not risen much when compared to other necessary commodities the farmer uses. When one considers the return of $3, $4 or more for every $1 invested in plant food, it appears that the farmer could literally spend himself into prosperity by larger investments in fertilizers.

The exact position of the farmer today is described in many ways. Much depends upon who's talking; the area which he's studied; and whether he is selling to or buying from the farmer. One economist, Mervin G. Smith, Ohio Agricultural Experiment Station, Wooster, said in a recent publication from the station, that net income from farming in the U.S. for 1960 is expected to be at least as low as the $11 billion earned last year.

However, this is better than the 5% to 7% decline predicted at the beginning of the year. Improvement in certain livestock prices, plus small increases in poultry, eggs, corn, wheat, potatoes and cotton have contributed to relieving the situation.

Still, he says, many farmers are experiencing the tightest squeeze they have had since World War II. "Scattered reports from farmers' records for last year show that some of the best farmers in the country barely broke even and when interest on investment was charged, nothing was received for the labor and management of the farmer and his family, or if a modest charge was made for labor, no earnings were left for the money invested in the farm business.

"Average income of farm people per person, including earnings for off-the-farm work, is less than half that received by nonfarm people. Prices of goods farmers buy for use in production, as well as that for living, continue to creep upward, while prices received for farm products remain depressed. Total farm production tends to continue high. While this overbalance is of great benefit to society by making relatively cheap food and fiber, it tends to prevent farmers as a group from receiving the general benefit or reward for their increased efficiency and productivity.

"This income situation is being reflected in many ways. The total number of farms continues to decline about 2% per year in the United States and 3% in Ohio.

"This does not mean that this percentage of land is being taken out of production. In most cases the land is consolidated into other farms. The remaining farmers attempt to increase their efficiency and maintain their income by spreading their overhead over larger acreage and expanding their own production.

"As a result of the persistent depression in farm incomes, farm land values are showing signs of leveling off and possibly weakening even with the continued demand from farmers for expanding the size of their farms.

"The increase in size of farm, the increasing farm costs, and the substitution of capital for labor on the farm are reflected in the increasing investments per farm. The capital investment per farm worker is now estimated about $21,000 as compared with about $15,000 per worker in manufacturing. On large grain farms the average investment is about $112,000 per farm worker.

"Even with these adjustments, the farm income problem persists and further widespread adjustments must take place. Much concern will be expressed during the next year about this chronic problem and the government policies which might be used for dealing with it. Apparently, the breadth and interrelationships of the adjustments required are much greater than many people have thought and much more work needs to be done to find the fact," Mr. Smith declared.

Among the facts needed to get to the farmer are those concerned with his return on investment for every dollar spent for chemical aids. Both fertilizers and pesticides are proved to be extremely worth while economically, but it is up to the sales people who contact the grower to convince him of these facts.

Teach Them Young

A STEP in the right direction toward better education in the use and handling of pesticides has been initiated by the Western Agricultural Chemicals Assn. Cash awards have been allocated for Oregon 4-H young people who do the best job of demonstrating safe use and handling of such materials in a statewide contest.

All of the state's 31,000 club members are eligible to compete in the contest in various county fairs and winners will then compete for awards to be given at the Oregon state fair.

Purpose of the contest, of course, is to promote the safe use of pesticides. Demonstration topics that have been recommended for the young people include safe handling and storage of chemical products, rodent control, use of correct application equipment, and the importance of reading and heeding labels on the packages.

The value of such a program goes far beyond the immediate time, although many farmers who use pesticides may be impressed with some of the demonstrations they see the youngsters making at county fairs and at the state fair. Needless to say, the kids themselves will learn a great deal in the process of looking into the situation. Since many of the 4-H boys will be asociated with agriculture in some way in their business careers, it is a hopeful speculation that their early learning may lend at least much good influence toward safe and sensible use of pesticides.

QUOTE

WHATEVER may happen to individual commodities, I am sure that the outstanding characteristic of our agriculture tomorrow, as it is today, will be 'growth.'

"But I think we can face this future with confidence. I have seen a report which states that more change has taken place in agriculture within our lifetime than in the previous 2,000 years. And more than half of the scientists trained in the past 2,000 years are alive today.

"The effects of the developments in research on our life today, particularly the contribution of research in agriculture, are beyond calculation. The importance of the vast fund of knowledge accumulated in the past half century is just beginning to be felt. As we draw on this resource bank, the progress will continue to astound us."—Wm. E. Warne, Commissioner, California State Department of Agriculture.

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Associated Publications—The Northwestern Miller, Farm Store Merchandising, Feedstuffs, Feedlot, Professional Nursing Home

July 27—Summer Field Day, Rutgers University College of Agriculture, New Brunswick, N.J.

July 28-29 — Fertilizer Conference and tour of field experiments, Alabama Agricultural Experiment Station, Auburn, Ala.

Aug. 25—Grassland-Dairy field day, Rutgers University Dairy Research farm, Beemerville, near Sussex, N.J.

Sept. 29-30—Iowa Seed Dealers Assn., Savery Hotel, Des Moines, Iowa.

Oct. 14 — Association of American Fertilizer Control Officials, Shoreham Hotel, Washington, D.C. B. D. Cloaninger, Box 392, Clemson, S.C., secretary.

Nov. 9-11—National Fertilizer Solutions Assn. 1960 convention, Peabody Hotel, Memphis, Tenn.

Nov. 28-Dec. 1—Eighth Annual Meeting, Entomological Society of America, Haddon Hotel, Atlantic City, N.J.

Meeting Memos listed above are being listed in this department this week for the first time.

June 21-22—Eighteenth Annual Convention, Association of Southern Feed & Fertilizer Control Officials, Riverside Hotel, Gatlinburg, Tenn. For further information, write Maurice B. Rowe, secretary-treasurer, Department of Agriculture, 1119 State Office Building, Richmond 19, Va.

June 25—Del-Mar-Va Peninsula Fertilizer Assn., Annual Convention, George Washington Hotel, Ocean City, Md.

June 27-29 — Northwest Section, American Society of Range Management summer meeting, John Day, Oregon.

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June 27-29—Pacific Branch, Entomological Society of America, Davenport Hotel, Spokane, Wash.

July 11-13—Annual meeting, Western Society of Crop Scientists, University of Nevada, Reno, Nev.

July 11-13—North Central Agronomy Society, Summer meeting, University of Minnesota Farm Campus, St. Paul, Minn.

July 12-14—Northeast Branch, American Society of Agronomy, University of New Hampshire, Durham, N.H.

July 13-15—Eleventh Annual Fertilizer Conference of the Pacific Northwest, Hotel Utah, Salt Lake City; E. R. Bertramson, State College of Washington, Pullman, Wash., chairman.

July 20-21—Summer Lime and Fertilizer Conference, headquarters Otesaga Hotel, Cooperstown, N.Y.

July 27-29—Great Plains Agricultural Council, 1960 meeting, Laramie, Wyo.

July 27-30—Southwest Fertilizer Conference and Grade Hearing, Galvez Hotel, Galveston, Texas.

Aug. 2-3 — Ohio Pesticide Institute, Ohio Agricultural Experiment Station, Wooster, Ohio.

Aug. 10—Field Day, Lockwood Farm of the Connecticut Agricultural Experiment Station, New Haven, Conn.

Aug. 10-11—Northeast Regional Fertilizer Safety School, Park Sheraton Hotel, New York City.

Aug. 15-23 — Seventh International Soil Science Congress, University of Wisconsin, Madison, Wis., Prof. Emil Truog, Congress Manager, Soils Building, College of Agriculture, Madison 6, Wis.

Aug. 16-17—Midwest Regional Fertilizer Safety School, National Safety Council Headquarters, Chicago.

Aug. 21-25 — Canadian Fertilizers Assn., annual convention, Manoir Richelieu Hotel, Murray Bay, Quebec, Canada. H. H. Skelton, P.O. Box 147, Hochelaga Station, Montreal, Que., Canada, general chairman.

Aug. 25-27—Southeast Regional Fertilizer Safety School, Wilmington, N.C.

Aug. 25-27—Mississippi Soil Fertility and Plant Food Council, 1960 meeting, Buena Vista Hotel, Biloxi, Miss.

Sept. 24-26 — Western Agricultural Chemicals Assn., 31st annual meeting, Palm Springs Riviera Hotel, Palm Springs, Cal.

Sept. 27-29—Annual meeting of National Agricultural Chemicals Assn. for 1960, Hotel del Coronado, Coronado, Cal.

Sept. 29-30—Northeast Fertilizer Conference, Hotel Hershey, Hershey, Pa.

Oct. 5-6—Southeast Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 10-11—2nd annual Four State Aerial Applicators Conference, Yakima, Wash., Norkem Corp. sponsoring.

Oct. 17-21—48th annual National Safety Congress, Fertilizer Section. LaSalle Hotel, Chicago.

Oct. 31-Nov. 3—International Crop Improvement Assn. meeting, Denver, Colo.

Nov. 2-4—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C.

Nov. 3-4—Annual fall convention, Pacific Northwest Plant Food Assn., Boise, Idaho.

Nov. 9-11—National Fertilizer Solutions Assn., 1960 Convention, Memphis, Tenn.

Nov. 13-15—California Fertilizer Assn., 37th annual meeting, del Coronado Hotel, Coronado, Cal.

Nov. 29—Oklahoma Fertilizer Dealers Conference, Oklahoma Plant Food Educational Society and Oklahoma State University cooperators, Huckins Hotel, Oklahoma City, Okla.

Dec. 14—Louisiana Fertilizer Conference, Louisiana Plant Food Educational Society and Louisiana State University cooperators, Baton Rouge, La.

Jan. 11-13 — Agricultural Ammonia Institute, 10th annual convention, Memphis, Tenn.

1961

Jan. 9-10—Texas Plant Food Conference, Texas Plant Food Educational Society and Texas A&M cooperators, College Station, Texas.

Jan. 17-18—Arkansas Plant Food Conference, Arkansas Plant Food Educational Society and University of Arkansas cooperators, Little Rock, Ark.

Feb. 1-2 — Soil Science Society of North Carolina Annual Meeting, Williams Hall, North Carolina State College, Raleigh, N.C.

Japanese Group Views Niagara Pesticide Works

MIDDLEPORT, N.Y.—Eleven Japanese agricultural leaders visited headquarters of the Niagara Chemical Division of Food Machinery & Chemical Corp. to observe techniques in pesticide research and development which might be translated to meet Japan's own agricultural pest problems. The group is in the U.S. under the program of the International Cooperation Administration, U.S. Department of Agriculture, to study this nation's approach to pest control.

The visit to Niagara included an extensive tour of the firm's research laboratories and farm as well as a brief look at its production facilities. Stuart Bear, manager of Niagara Chemical, welcomed the guests upon their arrival with general remarks on the company's aims and activities. Dr. Robert Gates, director of research, also addressed the visitors, discussing Niagara's research program as well as what's new in overall U.S. pesticidal development.

CALENDAR FOR 1960-61

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Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 20¢ per word; minimum charge $3.00. Situations wanted, 15¢ a word; $2.25 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 25¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $12 per column inch.

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HARD WORKING GRADUATE ENTOmologist with 15 years' experience in pesticide and fertilizer sales and service. Desires position leading to management. Address Ad No. 6087, Croplife, Minneapolis 40, Minn.

MACHINERY WANTED

EQUIPMENT WANTED — OPEN MOUTH bagger for granular fertilizer 50 to 80 lb. Also conveyor, sewing stand and head. Southwest Fertilizer & Chemical Company of El Paso, Inc., P. O. Box 5218, El Paso, Texas.

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Croplife
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Package Plant Sales Firm Appointed

DECATUR, ILL.—The Woods Construction Co. of Fort Dodge, Iowa, was recently appointed by Midstate Machinery Co. to market new Midstate fertilizer plants. These plants are designed for blending and mixing bulk fertilizer, and for installation in any simple steel or frame building, the company says. Such plants are engineered for one or two man operation with capacities up to 30 tons per hour.

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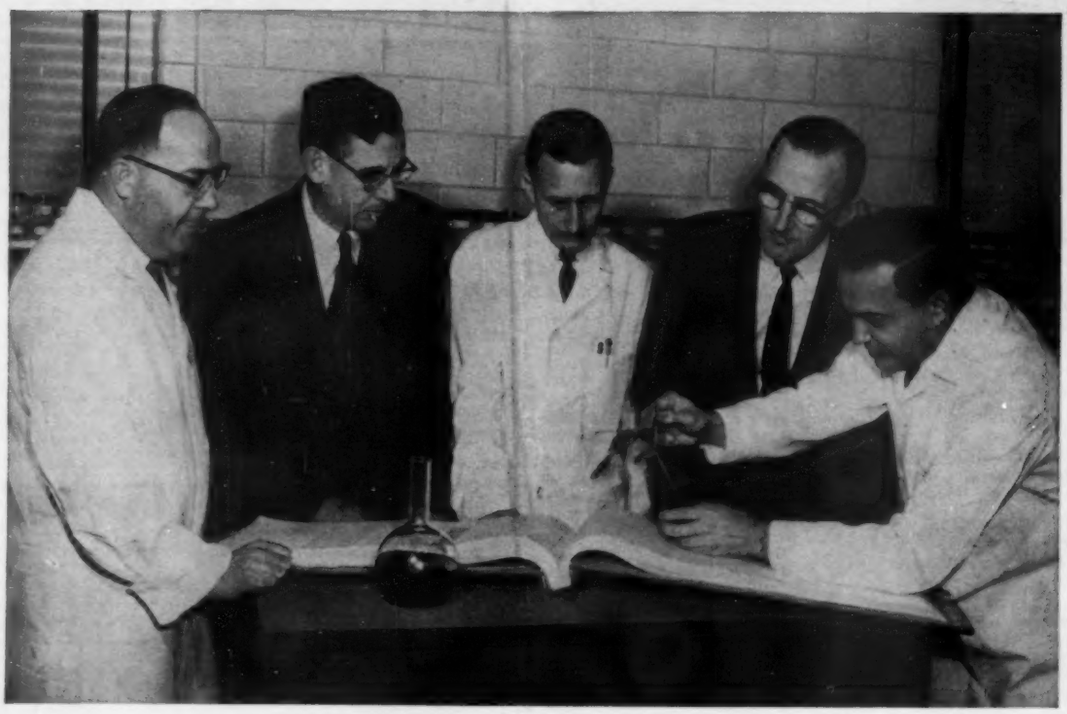

(Discussing promising new insecticide compounds at Hercules' Agricultural Chemicals Laboratory are: George Buntin, discoverer of toxaphene; Dr. E. N. Woodbury, laboratory supervisor; Dr. Keith D. Ihde, research entomologist; Dr. Arthur D. Lohr, supervisor, Naval Stores research; and Dr. William R. Diveley, a discoverer of Delnav.)

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Toxaphene has had a remarkable history. In a fast-moving industry this versatile insecticide maintains its leadership after more than 12 years of service to agriculture. New uses are being found for toxaphene each year as it continues its dynamic growth.

Continuous research is carried on by Hercules Powder Company to find new chemicals for agriculture, and to find better ways to utilize the tools now available. Many of the people doing this work were engaged in the original development of toxaphene. Besides laboratory research, Hercules has placed great emphasis upon field testing and large-scale demonstrations. From such applied research in cotton insect control, for example, has come information to help farmers get better yields while lowering their production costs.

TOXAPHENE

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HERCULES POWDER COMPANY
INCORPORATED
Wilmington, Delaware

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